DOCUMENT RESUME

ED 281 551 IR 051 895

AUTHOR Malik, M. F.; Thwaites, H. M.
TITLE Communication Analysis of Environment.
INSTITUTION Concordia Univ., Montreal (Quebec). Faculty of Arts and Science.
PUB DATE 86
NOTE 100p.; Some figures and charts contain small print.
PUB TYPE Guides - Classroom Use - Materials (For Learner) (051)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Acoustical Environment; Autoinstructional Aids; Behavior Patterns; *Communication (Thought Transfer); *Communication Research; *Cybernetics; Environmental Research; Higher Education; *Information Sources; *Information Theory; *Research Methodology; Structural Elements (Construction); Visual Environment
IDENTIFIERS Concordia University PQ

ABSTRACT

This textbook was developed for use in a Concordia University (Quebec) course entitled "Communication Analysis of Environment." Designed as a practical application of information theory and cybernetics in the field of communication studies, the course is intended to be a self-instructional process, whereby each student chooses one information complex and studies it individually, through field observations, laboratory tests, readings, notations, design sketches, and measurement, as advised by the professor. The textbook includes a course description and discussions of the following topics: "The Process of Communication Analysis Related to Information Complexes and to Film and Television Location Assessment," "Basic Classification of Elements in the Communication Analysis of an Information Complex," "Methodology of Communication Analysis of the Environment," "Communication Analysis Protocols for Visual and Audio-Visual Information Complexes," and "Communication Analysis of Sound Information Complexes." Illustrations of various methods of classifying elements in the communication analysis of an information complex are appended; and a 25-item bibliography is provided. (KM)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED281551

# Communication Analysis of Environment

Dr. M.F. Malik and H.M. Thwaites

IR051895

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M.F. Malik

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

# COMMUNICATION ANALYSIS OF ENVIRONMENT

Dr. M. F. Malik & H. M. Thwaites

Department of Communication Studies

Concordia University
Faculty of Arts & Sciences
Communication Studies Department
Montréal, Québec
Canada

© 1986

## Acknowledgement

The final version of this textbook has been completed with the valuable help of Mrs. Debbie McFadden and Miss Lise Hamilton for their care in the initial typing and editing of various parts of the manuscript, and to Miss Zinette Khan, for the electronic wordprocessing of the final manuscript. Financial support aiding the completion of the textbook came from the Learning Development Center of Concordia University and its Director, Ron Smith.

To these people and departments, the co-authors would like to express their sincere gratitude.

## Preface

Communication Analysis is a tool for the perceptual assessment of existing or projected information compelxes. An information complex is an established reality perceived by one or many humans, it could be of a physical nature, such as a building, landscape, city street; or of a pure informational nature, such as a film, television program, photographic picutre, painting, or sculpture.

The analysis process takes into account the physical, formal, and behavioural properties of an information complex, and searches for scientific data, determining the information impact of it.

References are made within this text to the exhibition and display design field, to the production of films and television programs, and to urban planning with the application of the communication analysis method.

# TABLE OF CONTENTS


| Chapter | | Page |
|---|---|---|
| | Preface | i |
| 1. | Course Description | 1 |
| 2. | The Process of Communication Analysis Related to Information Complexes and to Film and Television Location Assessment | 8 |
| 3. | Basic Classification of the Elements | 24 |
| 4. | Methodology of Communication Analysis of the Environment | 31 |
| 5. | Communication Analysis Protocols for Visual and Audio-Visual Information Complexes | 48 |
| 6. | Communication Analysis of Sound Information Complexes | 60 |
| 7. | Apendices | 71 |
| 8. | Bibliography and Related Sources | 91 |

1

# Course Description:
# Communication Analysis of Environment

## Course Description:

## Communication Analysis of Environment

This course is designed as a practical application of information theory and cybernetics in the field of Communication Studies.

Any information absorbed by human beings via sensoric channels, and existing as a physical information complex, can be analyzed by this mehtod.

For the simplicity of the exercises to be completed during the course, the best suitable information complexes for analysis are listed in this text.

The method of this course follows a **self-instructional process** whereby each student chooses **one information complex** and studies it **individually** step by step, as advised by the professor.

In **practical fieldwork,** the student learns the basis; of information theory, the process of communication, and the structure of the information chain. The work in the course consists of:

1. Gathering data on a chosen information complex.
2. Relating the data to the methodologic scheme (keys and protocols for communication analysis) and documenting them scientifically.
3. Evaluating the data toward the structure of communciation process.
4. Compiling the notes and documentation material into a **written final compilative report.**

Field observations, laboratory tests, readings, notations, designs sketches, measuring are integral parts of the course.

No classroom lectures, except for a short introduction are given in this course. All necessary instructions are taped or printed and available for each student in the Learning Centre. He/she can either study the tapes or printed materials at the Learning Centre or copy the articles from the Learning Centre originals.

Individual problems regarding projects or difficulties in learning are solved during personal consultations with the professor, according to a weekly schedule. Consultations should be booked at least 24 hours in advance by signing the student's name on the consultation schedule posted on the departmental bulletin board.

The course work on a project consists of three parts. Each part should be completed by all the students in the space of a three-week period. Final work on a compilative report is estimated at three weeks also. After the student finishes each part of the work for the course, he/she can show the completed work (in draft) to the professor and get approval for the continuation to the next section of the project.

There is a possibility of completing advanced communication analysis (of a film, TV program, photo-serial, etc.) for those students who already have completed a similar course in their previous studies, or who possess the practical knowledge of program research methodologies with the assessments of film and television locations.

**Course Workload**

For this course, the student should reserve 50 - 80 working hours per term. Approximately 30 - 60 hours are to be spent on fieldwork according to the place of the chosen project. Approximately 20 hours should be spent on instruction with the professor or in the Learning Center. Approximately 10 - 25 hours are to be spent on the compilative report.

**Course Schedule**

At the beginning of the course, an orientation meeting is held with an explanation of the course program, the method of study and the system of consultation. After that, each student will proceed on his/her own individual study scheme, with an established study plan decided upon in advance, with consultations booked ahead each week.

Consultations with the professor can be either direct in discussion, or indirect via the Learning Centre facilities.

Each student must show the professor his/her work completed for the scheduled part of the project on time. Failure to do so or delays in the project work may result in a mark under 50% despite outstanding project quality. Three weeks before the lectures for the term end, each student has a chance to present his/her draft of the compilative report to the professor for a preliminary evaluation, thus enabling him/her to make any final corrections and improvements.

The final compilative reports are due for evaluation on December 1st and March 31st, for the respective sections of the course.

In the case of any doubt concerning the authorship or originality of project work, the professor can assign a control test, which is in praxis, a double-check of the student's knowledge gain.

**Project Clearing**

Each project in communication analysis must be done with the full understanding and permission of the owners/operators of the information complex. It is the responsibility of each student to secure this permission during the first two weeks of the course. No project should be approved or started without such permission.

**Project Ownership or Sponsorhip**

Some of the projects done by students in the past were sponsored and later purchased by the owners of interested companies. It is the full right of the student to use his/her communication analysis project afterwards for publication or sale under his/her authorship. The project must be labelled as follows: "Completed as a Project in Communication Analysis Course at the Department of Communication Studies, Faculty of Arts and Science, Concordia University, Montreal, Quebec, Canada." The professor of the course has the full right to stop or oppose such a use if the project is of low professional quality or contains false or distorted information.

## Course Work Program

| | | |
|---|---|---|
| 1st. week | - | Orientation meeting |
| 2nd week | - | Choosing the information complex, approval of owners, and approval the of professor |
| 3rd - 5th week | - | First part of project work: **Global Space Orientation** |
| 6th - 8th week | - | Second part of project work: **Formal Phenomena** |
| 9th - 11th week | - | Third part of project work: **Behavioral Phenomena** |
| 12th week | - | Final Compilative Report |

The final deadline for Compilative Report: December 1st and March 31st, (for respective sections of the course).

The open period for preliminary evaluation by professor: November 15th - 30th and March 15th - 30th.

## Recommended Information Complexes for Analysis

Information complexes, chosen for the basic course level, should be **of a purely information nature**, that is: the main purpose of the physical facility is to transmit information to humans via sensoric channels. Highly **functional** information compelxes such as a (bank, post office, public building) or **communication devices** (cinema, theatre, arena) **are not recommended** for analysis.

Therefore, the following information complexes are recommended choices:

A. **Exhibition:**

Any interior or exterior exhibition or exhibition pavilion. Cultural, industrial and commercial exhibitions or fairs.

B. **Display:**

Any display stand on an exhibition ground, in a department store, or shop-window display.

C. **Gallery:**

Art Gallery, Gallery of Paintings, Gallery of Sculptures, Musée des Beaux Arts, etc.

D. **Museum:**

Art or Historical Museum, Museum of Natural History, Exterior Museum, Chateau de Ramezay, Wax Museum, Musée Historique Canadien...

Further, there are information complexes with more functional characteristics, but still suitable for communication analysis:

E. **Parks, Gardens, Countryside:**

Any city park, garden, open for the public. Also, any countryside with exceptional communication value (beach, national park, monument, historical or natural point of interest).

F. **City Streets:**

Any city street in the extent of two or three blocks, any square within the city having a rich variety of visitor's passing through.

G. **Department Store:**

Any department store in town, or a part of it (floor, stand, department).

H. **Shopping Centre:**

Any suburban, downtown or underground shopping centre in the Montreal area.

**Note:** The information complexes in sections **F-H** may contain certain limitations of access due to weather, opening hours or visitor's flow -- which could all pose a difficulty in the project's completion. In addition, any information complex which serves the important human inner or outer activities, can be suitable, such as the following:

I. **Church:**

Any church in the downtown or suburban Montreal area, or part of a bigger religious complex, open to the public.

J. **Cultural Centre:**

Any exhibition, display or cultural centre activity can be chosen with aspects of information delivery, occuring over an extended time (at least six months).

**K. Transportation Complex:**

Such a theme can be chosen: a bus, train or an airport terminal, station, metro station.

**L. Cinematic Ride:**

Car, bus, train ride through the city or countryside.

## Extension Course Level Themes

If the student can prove to the professor at the beginning of the course that he/she is familiar with the communication analysis method, and can show at least two projects of a similar nature that he/she has done in the past, he may proceed to a more advanced level of work - analyzing a **programmed information complex.**

In this case, the student chooses a location for his/her future film or television program, as an information complex. Proceeding quickly through the basic level of the course (keys for communciation analysis) he/she continues to the level of set design, axonometries for camera and sound scanning, and at the end, performing the analytic preparation of scene syntax (découpage). During the latter part of the course, the student will build a 3D scenographic model of the location and will test the various versions of scene set-up.

## Evaluation of the Coursework

1. Final project 0% - 50%
2. Consultations 0% - 20%
3. Documentation of the project 0% - 20%
4. Attendance at orientation sessions 0% - 10%
5. Penalty for late delivery of the project one grade.

# 2

# The Process of Communication Analysis Related to Information Complexes and Film and Television Location Assessment

# Communication Analysis of Information Complexes

During our daily lives great amounts of information are detected by our senses, processed and stored in our brains. These details are not perceived in isolation, one by one, but in groups or bunches with certain preferences, or a hierarchy of some information over another. Certain groups of information are perceived as entities, others as patterns, others as mosaics. Some groups of information have their own complexities - own space, time, structure, and their reflections in our sensoric and mental processing system. They are carriers of many different messages or contents, depending on our past experiences, cultural or anthropological background, and the capacities of our mind. This is the reason why a relatively similar information structure has several different names, codes, of expressions. Also, they are happening in vastly different time segments: some information groups passing our senses within the range of seconds, and others happening over the centuries.

We would like to deal with information groups which have one common characteristic - they are perceived by humans and, sometimes, fully or partially created by them and for them. There are other information groups or complexes perceivable partially or fully only by animals, or some only by simple living cells, or some information complexes characteristic for the catalythic processes in the anorganic matter. We call them **information complexes** because individual information in them could be very different by form or matter, perceived by different senses in different time segments.

Communication analysis is a **tool** for research into the structure, form and behaviour of those complexes. It is based on the merge of certain aspects of system theory and cybernetics. It is examining the individual information within the group, their conection, influence of one upon the other, and possible impact of the group on human sensory systems. It could be used as thinking, recording or evaluative method in design, the media industry, education or science of arts.

## The Communication Analysis Process

The authors feel that in our present day we can no longer work in the old, synthetic, one-man show manner when creating films, television programs, theatre plays or exhibitions. Artwork, even as a very personal expression of feeling and knowledge, the process of creation, production, execution transmission and delivery, is made up of the co-operation of a large number of people, known or unknown to the initial artist.

Cetain objective laws are working in such a situation:

1. Law of teamwork - with co-operative, non-competitive attitude.
2. Law of common language - understood thoroughly by all members of the team.
3. Law of ultimate dependence on each others' semi-product in the production route.

To execute such a process, communciation analysis, is becoming an indispensable tool.

It is a thinking and recording process, presetting the beginning of a film, television program, theatre play or exhibition production. It consists of the observation of a reality, chosen for the production, and recording this reality into physical units (numbers, sketches, words) which later serve as measures or guides to all persons in the team.

In the past, a media production began with the written skeleton of a semantic mode (story) and was later filled in with the media characteristics. In our modern times, the semantic skeleton remains but the media characteristics are searched for very early in reality, as close as possible to the skeleton. Communication analysis has become the most efficient method of carrying out this search.

## Film and Television Location Assessment

Film shots and television scenes always contain pieces of reality - like a landscape, a city street, a living-room corner or a human face - from real, unchanged conditions (in a documentary film) - to the completely fabricated reality in the television studio (in a feature program).

All these realities, even in most documentaries, scientific films or TV programs, are somehow programmed - not necessarily by the script, the camera angle, or by the editing scheme only, but also by the performance conditions, or by the viewer (in his own psychodrama). Some elements are under the firm control of the artist; others are not. Therefore, it can easily happen that the original idea of the film or TV program is distorted, or reversed, during the production or during the performance or perception of the artwork. Usually, it is the artist's hope and pride to carry the initial data or concept unchanged through all production processes, and finally to the mind of the viewer. Film or television locations (places where scenes are scanned) can significantly enhance or distort the final impact the information has on the audience, in a film or in a TV program.

Historically, the technology and production processes were dictated by a selection of the best film or TV locations. Large production centers grew up around the part of the country with good accesibility for actors and crews, or with stable weather conditions (Hollywood). But in the past three decades, **authenticity** has brought film and TV crews to various places in the world, as opposed to numerous different sets which were built in remarkable stylistic and realistic detail in many TV studios.

Large expenses are involved with a film or television crew going to distant locations. The achievement of the effect of "reality" is sometimes minimal, or non-existent. Producers now judge all scripts carefully if large or exotic locations are demanded by the author, and shameful compromises are made or special effects are offered to the director in exchange for real sets.

What is the factual information value of a film or TV location? How can we analyze reality or assess its usefulness for a given script?

Communication Analysis, as a tool for film and television location assessment, can help answer these questions for the media production team of the 1980's.

# 1. THE INFORMATION COMPLEX

An information complex usually means a piece of reality which serves predominantly the perception or the sensoric interaction between humans. **Pure** information complexes are, for example, a cinema theatre, an arena, or screen of a television set, where no other function except information delivery is occurring therein. There are many other information complexes where the perceptual and functional aspect is merged, as in a museum where conservational aspect is connected with perceptual, exhibitional one, or in a city street, where function of public life is merged with show- case aspects.

**Functional Utilitarian complexes** have certain specified social, economical or biological functions, such as a bank, shopping center, or a town hall, with certain informational aspects attached thereto. The advertising industry is using this merge of informational and functional characteristics.

**Meta-Complexes** are those lacking in reality environment, and occurring exclusively within the frame of human mind, i.e., dreams, associations. These complexes could freely combine the reality aspect with irrealistic information and are highly individualistic in structure and contents. As a rule each information complex consists of:

1. Physical phenomena
2. Formal phenomena
3. Behavioural phenomena

**Physical Phenomena** are those constituting the **static, material portions** of information. Some information complexes are predominantly built on physical phenomena (building, landscape, sculpture). Other information complexes may have physical phenomena very limited in matter and unattached in the view of information structure (magnetic and plastic base of videotape is not connected too much to the content of television program; or the same film could be screened on many different projectors). There are **primary** and **substituted** physical phenomena: primary are those perceived directly by the consumer of information (sculpture viewed by a visitor to a gallery), substituted are those transmitted via other humans, or human-machine interaction (such as a camera shot of sculpture in television news program about the gallery).

**Formal Phenomena** are those which directly influence the perceptual process and the manner in which the information complex is perceived. They are corresponding to the human sensoric information channels: visual, audio, tactile, with a predominance of visual formal

phenomena, where the largest quantity of information input occurs. They determine the style, mood, climax of certain contents of the message. Some information complexes are found in formal phenomena (painted or photographed picture, musical piece), and much of our artistic originality is based upon them.

**Behavioural Phenomena** are those which refer to the process of communication, or syntax of information complex, with main emphasis on human interaction. They correspond to the human motoric or expressive activities, either of the perceiver or of the performer. Some information complexes are based, in their information impact, solely on them (for example, a theatre play, a live concert, or a sports event in an arena); for others the behavioural phenomena add a substantial component during the actual performance.

Each information complex is basically a **carrier** of various contents and messages. It has characteristic of an information **chain**, with three major components: (based on the Shannon-Weaver information model)

1. Information Source
2. Transmission Environment
3. Responding Receiver (s)

For a long time it was believed that the **information source** (building, street, picture, film, television program) contained all the content and messages fixed in pictures, words, views, sounds, and that it was exactly what the audience or viewers perceived. Now we know that the information source carries only part of the information content that is capable of starting a catalytic proceses in the human brain. Information sources can range from **natural** or even **accidental** (a view into the country, stone, cloud) to the fully **artifically created** (a painting, city, dance).

**Transmission Environment** (reader's room, cinema theatre, television set, exhibition space) was believed to be the only set of given passive conditions for the best undistorted transmission of the information source content and the messages to the receiver or destination. This is the prevailing case when the information complex is performed and perceived in one time period. The situation can be reversed when the transmission mode is repeated many times, and starts to create certain norms or perceptual stereotypes. Simulation of similar characteristics of the information complex perception could substantially change the content of the information or distort it. Most of these distortions are not understood or perceived by the audience, and could range from subliminal perceptual changes to the creation of archetypes.

**Responding Receivers** (viewers, audience of theatre play or concert, visitor to a museum or gallery, pedestrian on city street) were for a long time believed to be a consumer of the information source, content and message. This is far from true. The quantity and structure of the information source is very different from the information perceived and retained by the human mind. Usually only a small part of the information source content is actually processed in the brain, and a still smaller part is retained in human memory. The extraordinary power of the human mind to reprocess, enhance and restore the parts of the information content is giving way to the endless variations on a given theme - the previously delivered information source content, existing in a broad framework of a story, different views or the time succession of an event.

The **time** element is playing an immensely important part in any information complex. This seems to be absurd in the case of a building or countryside, where minor changes occur in many years, but becomes very pertinent in the case of television programs or films with many precisely edited information sequences.

In all cases there are **two time axes** in each information complex; the **Horizontal time axis** refers to the time elapsing **foreward** (in the case of a television program aired in a certain time to an audience perceiving it), or **backward** (in the case of a viewer's recall of a visit to a gallery, or subsequent action, based on the perception of information complex).

The **Vertical time axis** refers to the **density** of information in given time unit.

In the view of the **time structure of the information complex**, we could distinguish between an **unprogrammed, partically programmed, and fully programmed** information complex.

An **unprogrammed information complex** is such where the receiver is determining the time pace of perception, and in many cases the succession of the perceived parts of the information complex (a walk in the forest, a visit to a natural or historical monument, a walk along a city street, or a trip to the country by car).

A **partially programmed information complex** is such where the receiver must loosely follow some guide, skeleton or succession of events, but still has ample time to make a deviation, stops, reverses, or detailed observations (reading a book, a walk in a museum or gallery, observation of birds or wildlife, sightseeing tour in a city or castle).

A **fully programmed information complex** is such where the receiver must follow a prescribed succession (film, television program, concert, sport event in arena).

The **performance element** of information complexes could be **permanent** or **timed**. Permanent performance usually works with few physical or formal parameters, exceeding usually the limits of usual human environments (Grand Canyon Viewpoint). Timed performance is working usually with many different parameters of information units, and has specific syntax, connections between them (the story of an A. Christie novel).

Parameters of information units, delivered in one time segment, are creating **information load**. This amount of information should correspond with physiological and mental capabilities of human sensory input otherwise the information from the source of the complex is not delivered, or delivered in fractions. **Information overload** - the human ability to work with information overload is remarkable, the most visible is the handling of information patterns and information stresses.

Within the time frame of an information complex, as seen from the receiver's side, we could witness the **information complex impact** (quantity of catalytic changes in the human neural system after the perception of the information from complex).

## 2. COMMUNICATION ANALYSIS

**Communication Analysis** pertains to the systematic examination of the factors playing a role in the structure, detection, processing and storing of information units in the human memory during the communication process, or shortly thereafter. It is a thinking and data recording process which precedes design, script-writing, production, program research in media, architecture, commercial arts or education media production. Usually it is done by the manager of a team or the producer, in some cases by a designer or graphic artist, and results in the compilation of a production manual. It can be used in any phase of the media production process by the script-writer, director, cameraman, set-designer, or any other member of the creative team. With minor deviations, similar manuals can be useful for theatrical production, or any exhibition or large display.

**The Communication Analysis process consists of three parts:**

1. **Global Space Orientation** - is most useful for the physical assessment of information complex. In the media industry this could be perceived as the film or television location or studio set; in architecture feasibility location study; in exhibition and display industry it could be associated with thematic plan and synopsis. The designers, set-designers, or architects will probably need it the most.

2. **Formal Parts** - are most useful for the execution, building or assessing of the sensoric units of information complex. This preparatory work is asissting in the execution of pictures and sounds in building stylistic expressions, in the evaluation of the aesthetic impact of a countryside or an historical monument. It will be used by the cameraman, art director, painter or composer.

3. **Behavioural Phenomena** - encompasses the human perception of information complex and the human use of it. It will be most useful for the manager of an information complex, interpretative services, guides, directors, or actors.

There are a number of specific parameters recorded in each part of the work:

## A. GLOBAL SPACE ORIENTATION

In this area all aspects belonging to the physical properties of the information complex are expressed in the shortest communicative terms and codes (feet, sketches, floor and axonometric plans, physical units of light, sound, color, surface).

It is useful for:
- the architect in the conceptual planning of information complex.
- the environmentalist in the physical assessment of the informaiton complex impact on surrounding environment.
- the designer of a display in the general plan of exhibition.
- the set-designer in decor and set construction (in film and television production).

It is useful for:
- the director for the planning of an actor's action (in film, television, or theatre).
- the script-writer in the conception of the story skeleton.
- the cameraman in the selection of tools, equipment, and materials.

In general, there are three different space orientations:

I - Exterior

II - Interior

III - Environment of both

I. In the **Exterior** of an information complex the following parameters are important:

(1) The size of information complex, viewed toward the proportions, in which the complex will be perceived by humans. In this aspect any media conversions or distortion will have a profound effect.

(2) The **geometry** of information complex, is viewed from two different aspects:

- **constructional geometry** - pertinent for architectural, statistical and placement decisions.

- **perceptual geometry** - conveying the "audience view" of an information complex, important for the "association" or "involvement" aspect of the receivers, viewers.

(3) The **physical parts** of the exterior:

- **constructional details** (shadows, light and colour patches, lines of contours, curves and shapes) which will be significant composition marks influencing the **style** of information complex. These details can compliment or even change the logistic or semantic content of information complex.

(4) The **axonometries** (angular, perspective views of a location) are important for conveying the feelings of depth, distance and directions. **Vectors of space** are most important for those who will be directing any human action within information complex (film or theatre directors, or television floor directors).

(5) The **surfaces** (texture, colour, light, sound) expressed in physical units will be determining the correlation of reality within information complex with any artificial extension of it, or media conversion of it (in studio set).

II. In the **Interior** of the information complex the following parameters are important:

(1) Interior **structure** and **shape** - these will determine later the viewer's orientation within the complex. In media conversions it will shape the scenes, actor's action, and eventually the needs of the director of cameramen to distort, enlarge, or compress, the space of location or studio set.

(2) Interior **space**: There are three main "spaces" in every interior, from which the receiver gets his/her information units.

- **functional space** - where the receiver is moving himself (in a gallery, exhibition, museum), or where, in media production, actors or cameras are being moved.

- **informational space** - what people are looking at (showcases and their contents in a museum, pictures in a gallery, exhibits in displays, shop window displays on the street) or in media production - what we are scanning with the camera in descriptive shots.

- **complementary space** - remaining space in the interior, usually referred to as "background". Floors, walls, ceilings and far corners usually fall into this category.

The **main measures vary** in each category of interior space:

- for functional space - **human size, angles and time** are the main measure rules. Any distortion from this natural rule will influence receivers or the audience, considerably. Usually **pathways** through this space become **space axis** for the information flow either directly for the receiver, or fort the actor's movement. Numbers of measures, proportions, and vectors of axis express much more exactly the information parameters, than vague terms of verbal description (in film and television scripts) like "big", "small", "overwhelming", "narrow".

- for information space - **things, items size, angles and time** are the main measures. These can be either a free correlation of things and human beings, pieces of interior, angles - or this correlation could be set up in exact proportion. Usually the human eye and ear set the boundaries quickly, within which they are proportionally perceiving the things in the interior. But a starting information impact could happen whenever the boundaries between functional and informaitonal space are crossed (viewer's switch of attention from details in museum showcase to the big sculpture in the centre of exhibition room, or camera zoom from a piece of jewellery to the face of an actor).

- for complementary space - the **prevailing contrast, brightness or colour** are the measures of this space category. Usually such information units help to establish the overall climax, mood of the space, or support (distract) from the main semantic impact of the informational space.

III. In the **Environment** the following parameters are important:

(1) The **position** of the information complex and **toward larger entity** (town, landmark, country). Usually this statement serves as the **basic orientation reference** (in media production we refer to the "establishing shot" or "teaser" in commentary).

(2) The **spacial neighbours** determine for the receivers, future audiences, **how far** and **how fast** they will be able to identify the information complex with their previous experiences. Usually a projection of the **proportions between** various **spaces**, described in the exterior and interior of the information complex, will determine the **identification time and power.**

(3) The **timing of environment** is the average time in which most people are able to **discover, examine and view** the information complex. The time of discovery must be connected with plans and angular views. Audio information units are coming in this connection as secondary or inclusive (in film and television scripts we encounter this factor described by words like "first view", "exposition", "first glance").

## B. FORMAL PHENOMENA

This is an area where a search into the style and form of the information complex could be made. Exploration of these phenomena is most important for artists who will be creating the various parts of information complex, or persons who are responsible for the artistic or aesthetic impact of information complex. These parameters are especially important for:

- designers and graphic artists of exhibitions and displays
- cameramen and art directors in film and television production
- interpretative services, persons in museums, galleries and national parks
- environmental urbanists
- advertising firms and agencies

For practical reasons the information complex is anlaysed in **small parts**, or **units** - each showcase separately, each exhibit separately, each camera shot or television sequence separately. There are a few indispensable categories in this area:

(1) **3D Objects**: These are special objects within the unit of information complex. It could be an exhibit in a museum showcase, or maquette in an advertising display, or prop in the studio set of a television program. The data regarding numbers of items, sizes, positions, arrangements, surface colours and background contrasts are pertinent. Usually these data are expressed within the given time in which they are appearing before the audience (segment of museum tour, or notation on the shot sheet on floor plan of film studio). The **time** necessary for observation of those objects should be also estimated, as they may consume large time segments of the viewer's attention, and could substantially influence the content of information when combined with a low cinetic action level of the actors.

(2) **2D Objects**: These are mostly **substituted spaces or codes**. Picutres hanging on the walls, photographic images in galleries, supporting graphics in exhibition, verbal captions fall into this category. Special care should be taken with all pictures, graphics or words if they demand significantly different perceptual times than the remaining space, or if they are demanding meta-processing (thinking) time. They can steal or obsess the major information elements of whole space, image; contrast with the space composition and axis; change the mood or time preceeding the actor's action. The **Perceptual and processing time** is the most important parameter, as well as the size, position, arrangement, lighting and surface colours.

(3) **Audio Parts**: These are mostly the messages, coded in **words** and pronounced as commentary (to the gallery, exhibition or museum displays), or **dialogue** (in films and television programs). Usually they are analysed logistically according to the common meaning of words and sentences. But from the point of communication analysis the **structural semantic** analysis of text gives a more precise insight into the possible information impact, and **audiospectrographic analysis** is a good tool for spoken messages.

(4) **Climaxes**: These are possible **prevalent** colours, lights and sounds, appearing within the information complex. Usually if a certain spectral range occupies more than one third of the visual field it is perceived as prevalent colour. Sound prevalence needs at least fifty percent of intensity and spectra of the human ear. In the area of light we can differ prevalence in contrasts, brightness and directions, all of which could change the prevalence of colours. These parts usually influence and **moods** and **impressions** of audience about the information complex. They are more important in cases of steep information density, and they are major guides in cases of information overload and information skimming.

## C. BEHAVIOURAL PHENOMENA

This is the area of a search into the average matrixes of human behaviour if the information complex is perceived or lived by receivers or audience. Therefore the following parameters are most important for:

- exhibition directors and display managers
- script-writers in the areas of film and television
- theatre, film, and television directors
- actors
- editors and switchers in the film and television industry

Behavioural phenomena can influence the information complex either very early, before its creation, or very late, after the information complex is finished and perceived by audiences. It can be a guide scenario (of exhibition, film, television program) writing or decoupage, blocking of shots in a scene (mise en scene), or influence the time and number of theatre and studio rehearsals, or could measure, to a certain extent, the information impact of exhibition, film or television program.

There are two groups of behavioural phenomena parameters:

- behaviour of the information sources
- behaviour of the receiver

(1) **The behaviour of the information source** - is the quantitative search into the "story" of the location, building, park, street. It is **time and space notated** within the time of observation, or the time of the story.
The most important parameters are: the **structure of program**, or succession of small events within the information complex or the story; **program parts**, their formal, functional, cinetic and human characteristics. All these factors could influence significantly the operation of the information complex (behaviour of salesmen in shopping centres, behaviour of guides in a museum or natural park, behaviour, action and gestures of actors in film or television program). These factors could significantly enhance or detour the progression of the story, influence the casting, and determine to a large degree the cognitive and comprehension processes going on in audiences.

(2) **The behaviour of receivers** - is a quantitative search into the perception process that the audience is undergoing through the oberservation of information complex. It is done as a detailed **notation of external activities** of the receivers (exhibition or gallery visitors, viewers) cued to the particular parts of information complex. **Time, directions, succession** of observation activities are major guides for the receiver's behavioural pattern. If the information complex has limited or non-visible behavioural effects (such as a viewer sitting before a television set, or cinema-theatre visitor) **direct extraction of psychophysiological data** is giving a more precise answer than the traditional psychological tools (questionnaires, interviews, recall studies).

The last part of communication analysis is using the data of the three preceeding studies (physical, formal and behavioural phenomena) and is studying the **time structure of the information complex**, or the succession of the infomation units, when they are perceived by people, visitors, receivers.

The **time pattern** of an information complex is extremely useful to those persons who are determining the time slots, fields or sequences. It is most important in the cases of steep **information cascades**, as in radio, film and television programs, and some cases of fully programmed exhibition or theatre plays.

Therefore, the following data is most useful for:

- exhibition and display programmers
- editors or switchers in film and television industry
- conductors of orchestras
- partially to the directors and cameramen in cases of direct decoupages or camera editing on locations.

The following parameters are important:

(1) **Visual Fields**: When an ordinary person goes through the space of information complex, sees a film or television shot, explores an exhibition room or landscape, he/she is dividing the perceptual time into **space sequences or angular views**. These could be **distant views**, immediate **surrounding views** or various **detailed visual explorations**. In the case of receiver-visitor walking through a space there is great liberty for the person to select his/her own angular views from the pathway. In the case

of a fully programmed information complex, these angular views are determined by the designers of the information complex (in film or television: camera shots, Long Shot -- LS, Medium Shot -- MS, Detailed Shot -- DS or LDS). Within each visual field there could be a varying degree of **cinetism**, either in **axonometric movements**, or **intrinsic movements**.

The number, nature and succession of natural visual fields (those taken in liberty by viewer) could substantially help in the **editing/switching pattern** in the programming of the information complex.

(2) **Audio Fields**: In addition to the **logistic audio fields** (speech, commentary, dialogues) the receivers could encounter several, or many, spaces, where particular sounds could be heard within the information complex. Besides sound being complementary to the visual field, it could have its own distinguished meaning, information space and time. Parameters of number, geometry, intensity and spectrum of audio fields are important for sound direction and reproduction. In the cases of recorded music, concert or stereophonic reproduction, the audio fields are immensely important.

(3) **Other Sensoric Fields**: Spaces where distinguished smell or taste could be encountered, or where certain specific information from touching and vibrations could be felt, are considered the sensoric field. Usually it is bringing only additional information to the main visual and audio information channel. But in certain cases it could enhance or carry its own information unit. Unconventional exhibition and theatre styles (polyecran, cinesphere, Laterna Magica) unconventional film and television techniques (cinesphere, cinetarium, 3D television) are working with major input in those sensoric areas.

The form of the data recording uses time **notation, harmonograph techniques**, or various electromechanical or electrical programmers, where data is recorded on magnetic tape in digital or analogue modes.

## III. ULITIZATION

Communication Analysis of information complexes is used currently in architecture by urbanists and environmentalists, in museums and gallery displays, in film and television industry, and in theatre productions.

# 3

# Basic Classification of Elements In The Communication Analysis Of An Information Complex

# 1.0 PART I: GLOBAL SPACE ORIENTATION

## 1.1 Exterior Phenomena

1.11 **Size**

1.12 **Geometry**

1.12.1 Constructional geometry

1.12.2 Perceptual geometry

1.13 **Parts** - It is looked upon by two points of view.

1.13.1 functional (blocks, windows, lines, areas)

1.13.2 perceptual (shadows, lights, colours)

1.14 **Axonometry (position of object)**

1.15 **Surface:**

1.15.1 texture

1.15.2 materials

1.15.3 colours

1.15.4 light

1.15.5 sound

## 1.2 Interior Phenomena

1.21 **Interior Structure of Complex**

1.22 **Structural Parts (rooms, corners, halls) - number and size**

1.23 **Geometry of Interior Space:**

1.23.1 Constructional

1.23.2 Perceptual

1.24 **Functional Space:**

1.24.1 Passages (stairs, gangways)

1.24.2 Limited Space:

1.24.2.1 by time

1.24.2.2 by spatial aids

1.24.2.3 by receiver's factors (crowd)

1.24.3 Unlimited Space

1.24.4 Size Scale

1.24.5 Time Scale

1.24.6 Structure Sketch

1.25 **Space of Information Source:**

- 1.25.1 Size
- 1.25.2 Geometry:
  - 1.25.2.1 constructional
  - 1.25.2.2 perceptual
- 1.25.3 Structure: (rooms, corners, stands, show-case, areas)
- 1.25.4 Materials
- 1.25.5 Colours
- 1.25.6 Lights
- 1.25.7 Sounds

1.26 **Supplementary Space**:

- 1.26.1 Floors
- 1.26.2 Ceilings
- 1.26.3 Steps
- 1.26.4 Auditoria
- 1.26.5 Rest-Areas

## 1.3 Environmental Phenomena

1.31 **Position of Information Complex in Larger Complex of (city, buildings, halls, rooms, and so on)**

1.32 **Neighbouring Objects**:

- 1.32.1 Constructional
- 1.32.2 Functional
- 1.32.3 Informational (Perceptual)

1.33 **Structure of Environment**

1.34 **Functional Informational Space (Ways to Object)**:

- 1.34.1 type
- 1.34.2 length
- 1.34.3 directing factors (line, sidewalk, street, driveway)

# 2.0. PART II: FORMAL PARTS OF INFORMATION SOURCE

**2.1 3D Objects**

2.11 **Exhibited Real Objects**

2.11.1 goods

2.11.2 things

2.11.3 artworks

2.12 **Models and Marquettes**

2.13 **3D Compositions**

2.13.1 sculptures

2.13.2 light cinetic compositions,

2.13.3 arranged group of exhibits

2.14 **Size**

2.15 **Number**

2.16 **Position**

2.17 **Arrangement**

2.18 **Lighting**

2.19 **Surface / Background (material, colour, distance from object)**

2.20 **Colour of Exhibit**

**2.2 2D Objects**

2.21 **Pictures**

2.21.1 painted

2.21.2 printed

2.21.3 photogrpahic pictures:

2.21.3.1 prints

2.21.3.2 slides

2.21.3.3 slide mosaic

2.21.3.4 collages

2.21.4 cinetic pictures:

2.21.4.1 painted

2.21.4.2 printed

2.21.4.3 projected (films, TV)

2.21.5 Size
2.21.6 Length (in time)
2.21.7 Position in the Visual Field
2.21.8 Arrangement

2.22 **Verbal and Graphic Symbols:**
2.22.1 painted
2.22.2 printed
2.22.3 projected
2.22.4 reproduced
2.22.5 words
2.22.6 graphics

2.23 **Colours**
2.23.1 of objects
2.23.2 of areas
2.23.3 of compositions
2.23.4 of performances and live displays
2.23.5 mosaics

2.24 **Sounds**
2.24.1 noises
2.24.2 background sounds
2.24.3 speech
2.24.4 music

2.25 **Light**
2.25.1 general light
2.25.2 modelled light
2.25.3 daylight
2.25.4 function of darkness (black-light)
2.25.5 colour-light
2.25.6 cinetic light

# 3.0 PART III: BEHAVIOUR OF THE INFORMATION COMPLEX

**3.1 Behaviour of the Information Source**

3.11 **Program**

3.11.1 length

3.11.2 size

3.11.3 parts

3.12 **Structure of Program**

3.13 **Components of the Program**

3.14 **Formal Parts of Program**

3.15 **Functional Parts and Components of Program**

3.16 **Cinetic Components**

3.17 **Human Components**

3.18 **Automation Components**

3.19 **Feedback Components**

**3.2 Behaviour of Receivers**

3.21 **Length of Perception**

3.22 **Structure of Perception Time**

3.23 **Activity Points**

3.24 **Passivity or Rest Points**

3.25 **Density of Receivers:**

3.25.1 in space

3.25.2 in time

3.26 **Migration of Receivers**

3.27 **Fatigue**

3.28 **Exterior Effects (motoric)**

**3.3 Transmission Conditions**

3.31 **Visual Fields**

3.31.1 Number

3.31.2 Size

3.31.3 Semantic Components

3.31.4 Structure

3.31.5 Formal Components (number, character)

3.31.6 Position to Receivers

3.31.7 Axonometry of Visual Fields

3.32 **Audio Fields**

3.32.1 Geometry

3.32.2 Number

3.32.3 Intensity

3.32.4 Structure

3.32.5 Spectrum

3.33 **Other Sensoric Fields**

3.33.1 Smell

3.33.2 Touch

3.33.3 Taste

3.33.4 Vibrations

## 4.0 SEMANTIC SUPPLEMENT

4.1 Ideas of Object

4.2 Relation of ideas to used information aids and forms

4.3 Relation of ideas to the sensoric fields

4.4 Pure ideological influence of themes

**Recommended Documentation:**

**A. Plans of Object (drawings or photostat copies)**

**B. Photographs of Exterior views (perceptual geometry)**

**C. Photographs of Interior views**

**D. Photographic records or behaviour of receivers**

**E. Time diagram of perception (measured by personal observation**

# 4

# Methodology Of Communication Analysis Of Environment

## 0.00 INTRODUCTION

Choose one typical and concrete information complex such as a building with some rooms, an exhibition, church, store or park.

**0.01 Three Basic Parameters to watch for in your information complex choice:**

The Information value. It should have a rich information potential; people go there for the purpose of receiving some Information.

How can you recognize a rich information complex ?

0.01.1 It should have a large number of information items (pictures, goods, posters, exhibits)

0.01.2 It is perceived in a short amount of time and by a large amount of people.

0.01.3 People are factually spending time by perceiving the complex and are not just passing by or going in for a functional purpose.

**0.02 Accessibility of the information complex.**

0.02.1 It should be easily accessible to you.

0.02.2 Visit the location several times and observe how many people are really visiting the place.

**0.03 Relationship between you and the information complex.**

0.03.1 Establish a relationship with the head of the particular place i.e. owner of the store, chaplain of the church...etc.

0.03.2 Establish a positive relationship between you and the people running the information complex.

0.03.3 You should be able to gain access to documentation material about a place or be able to remove them temporarily.

**0.1 When you Have Chosen A Place:**

0.11 **Visit** it for a general outlook of how the information complex works. In other words, what information processes are happening during a work program at the complex.

0.12 **Experience** the theme and content of the complex like a visitor.

0.13 **Watch** how the people around you perceive the information complex.

0.14 **After** the first visit, see the person who is responsible for the information complex.

0.15 **Relate** your reason for wanting to use the information complex and how you intend to proceed with your work. Show them the outline of the course.

0.16 **Stress** the importance of your Communications Analysis Course, as well as the information values and advantages of the complex.

0.17 **Attain** as much available data as possible from the people in charge, about the interior and exterior of the information compelx and about the people in it.

0.18 **After** your visit, return to the beginning of your tour, the first point where you can learn about the complex through your senses. For instance, locate the spot where you can first perceive the information complex i.e., a few blocks or miles away. Then proceed with your visit according to the **Basic Classification for Communication Analysis.**

0.19 **If** you should have any problems with the items listed above, consult with the professor of the course as soon as possible for a reference letter, discussion of the problems or possible switching of the project choice entirely.

It is important to establish these initial steps in the project as early as possible and to have them confirmed by the authorities in charge, in order to avoid any complications or difficulties in the later stages.

# 1.00 PART I: GLOBAL SPACE ORIENTATION

1.1 Exterior Phenomena

1.2 Interior Pehnomena

1.3 Environmental Phenomena

## 1.1 Exterior Phenomena

1.11 **Size** - It is comparable to perceptual conditions. You will have to judge or measure by physical units of feet, inches, or metres. Estimate as close as possible the measurements.
- Perceptual size may vary with surroundings which you do not have access to such as the light or with the positions we take.

1.12 **Geometry** - It is looked upon from two points of view.

1.12.1 **Constructional** geometry - Is the geometry of the building, street, structure of information complex as it appears in the architectural plan.

1.12.2 **Perceptual** geometry - Is the face of the building as it appears to us in a factual situation, such as:
- with other buildings in the way, or with cars or people in the way
- when affected by atmospheric conditions such as night or fog
- the direction and intensity of light which may affect the perceptual geometry
- the weather, humidity, heat, time of day (night or day), time of year (winter of summer), type of weather (cloudy or sunny)...

1.13 **Parts of Building** - This section is looked upon from two points of view.

1.13.1 **Functional** - Includes parts of the information complex or room which are determined from or by the architectural structure point of view, such as windows, walls, etcetera.

1.13.2 **Perceptual** - They are restricted in relationships with human senses. Examples include the reflection of surrounding country or sky in a window; a shadow on a wall and so on.

1.14 **Axonometry** - This is the position of the object or information complex in relation to us, such as when I am looking at the building. It varies with the course or vector positon of the viewer.

**N.B.** For all the previous parts a small sketch or drawing is the best form of information transmission. Refer to appendices for examples.

1.15 **Surface of the Information Complex:**

1.15.1 **Physical** - It includes the texture of the information complex as well as the material of which it consists.

1.15.2 **Perceptual** - It includes colour, light or sound. They could be measured in terms of reflection: indexes, physical units such as: (angstroms, millimicrons, footcandles, lumens, decibels, phones).

## 1.2 Interior Phenomena

1.21 **General Interior Structure of Complex**

1.21.1 How many rooms are there?

1.21.2 How are the rooms positioned?

1.21.3 How effectually are they organized?

1.21.4 How many floors are there to the building?

1.22 **Structural Parts**

1.22.1 Number and size of rooms, and position of rooms in relation to each other i.e., rooms, corners, halls.

1.23 **Geometry of Interior Space**

1.23.1 **Constructional** - It is the shape of the interior space

1.23.2 **Perceptual** - It is characterized by the appearance of rooms, or spaces to the interiors

**There are two different spaces:**

1.24 **Functional Space** - It is where the function of the complex is perceptually fulfilled:

1.24.1 Space where you are moving as a visitor i.e., stairs, gangways, corridors, passages, etcetera.

1.24.2 This space may be **limited** by:

1.24.2.1 - time (in which people could or generally do perceive it)

1.24.2.2 - spatial aids such as panels or the stance or shape of passage, colour

1.24.2.3 - receiver's factors such as a crowd of other people who are there perceiving at the same time (as in museum exhibtions.)

1.24.3 This space may be **unlimited** by no people being in the way (such as in a park or in the country) or generally as empty space.

In 1.24 - 1.24.4 there are two scales or ranges of functional space:

1.24.4 **Size scales** - It is the relationship between your body and the scale of the passages, stairs, or gangways. It involves the room's capacity to hold a certain number of people.

1.24.5 **Time scales** -It is limited or unlimited by time for viewing. The program time should be attained.

**N.B.** Do the above by a structure sketch or pictures. (See notation diagrams in the appendices)

1.25 **Space of Information Source** - It is characterized by the space of the showcounter, space of exhibit, space of information source like film screen or three dimensional exhibit.

1.25.1 In this space, parameters like size, constructional and perceptual geometry, structure, materials from which exhibits or information points are built, surfaces, colours, lights, and sounds are most important.

1.26 **Supplementary Space** - It includes floors, ceilings, steps, and sometimes auditoria or places to rest or recall already perceived information.

## 1.3 Environmental Phenomena

1.31 **Position of Information Complex in Larger Complex of (city, buildings, halls, rooms, and so on)** - Look over the position of the information complex in its larger area or context of city, group of buildings, halls, rooms, etcetera.

1.32 **Neighbouring Objects** - Examine where your information complex is situated and see what or how the neighbouring objects look like. Are they mainly for:

1.32.1 Constructional purposes such as sidewalks or supporting structures?

1.32.2 Functional information complexes such as a building or houses built for certain purpose of manufacturing goods or for transportation or for banking commercial purposes ?

1.32.3 Informational (perceptual) characteristics? For instance, in the lab exhibition surrounding pavillions there are typical examples of an information environment.

1.33 **Structure of Environment**

1.33.1 In which part of the city or a larger complex is the object situated? Examples include residential, exhibitional, comercial area, or sometimes industrial park.

1.34 **Functional Information Space**

1.34.1 This is the way to be followed to reach the object or the information complex.

1.34.2 Look over the process of the functional information space and note how you could reach the information complex.

1.34.3 **Type** - what kind of transportation routes lead to your complex? Examples include highways or roads accessible by cars or if mostly paths or sidewalks for walking visitors, or other mechanical means such as an elevator or other means of ground or air transportation.

1.34.4 **Length** - approximately how long in time are the main routes to the complex ?

1.34.5 **Directing factors** - They include lines, sidewalks, streets or driveways.

- Look on the types of ways:

  - length

  - directions

  - and factually on their character.

**Note** the progress of the ways to the complex in a visual and aural sense.

**METHOD:** Notes, drawings, sketches, pictures. (see appendices for examples)

Be able to document / support every point or small question with complete data about it (not necessarily architectural or statistical data, but parameters you could access with your senses such as sight, hearing, or orientation in space).

# 2.0 PART II: FORMAL PARTS OF INFORMATION SOURCE

- This includes the forms of information in the information complex that we are surveying.

- Assume a detailed analysis approach on one part of the information complex. (Examples include: - one room from exhibition gallery

  - one shot from a street

  - one boutique from an underground shopping center

  - one rack or section in a display

  - one sales corner in a department store.

- We will be repeating some of the elements of the first part (Interior Phenomena). This time, pay attention to the individual elements withn one visual and aural field. (See diagram of Basic Visual Data Sheet, in the appendix).

## 2.1 3D Objects

### 2.11 Exhibited Real Objects (goods, things, artworks)

2.11.1 All three-dimensional realistic things performed, exhibited, arranged in **one** visual field we are examining.

2.12 **Their substitutes,** models, or maquettes are perceived a little differently, but in mental space or in the mind of the viewer, they are substituted by the real objects (more often with increased distance from viewer).

2.13 **3D Compositions** - (sculptures, light cinetic compositions, arranged group of exhibits) are sometimes perceived as a whole i.e., department store food racks.

If you are examining:

2.14 **Size** - of 3D objects

2.14.1 Do not measure every inch or foor for every single item in the room. We are aiming for average size, therefore, the range between smallest and largest exhibits is what we will be expressing. In other words, the average size of the exhibits inside the room is what concerns us.

2.14.2 In all of the situations in which we are examining visual fields, our eye is mentally adjusting to the average size of the exhibit or the average size of the items. Therefore, our perception is very different if we are entering a room or shop where jewellery (small items, maximum 1" x 1" x 1") is exhibited or if we enter a department store where large items like carpets, furniture, or other appliances contribute to the content of the 3D objects. The camera however, does not have this instant caspacity of the human eye, and therefore we must note and be aware of, the size range of objects for the correct camera lens selection, etc.

2.15 **Number** - in room, showcase, corner...

2.15.1 Bring attention to the number of:

- objects exhibited together
- items in a showcase
- exhibits on racks
- items in a hall or street

2.16 **Position**

2.16.1 how these items are exhibited
2.16.2 how they are positioned toward the visitor, viewer, or reciever

2.17 **Arrangement**

2.17.1 What kind of arrangement is executed to secure the best visual angle, or to secure directed visual field toward the visitor

2.18 **Lighting**

2.18.1 Pay attention to the lighting of 3D objects

2.18.2 In certain cases like in galleries and exhibitions, the lighting is positioned to specifically fix the visual field, so that items will be displayed for the receiver in the best possible way. Items may also be displayed in such a way that only the desired sides will be seen.

2.19 **Surface / Background**

2.19.1 Here it is important to pay attention to the backgrounds behind exhibits, behind a showcase, or pay close attention to the function of walls which are very often the background for exhibited items.

2.20 **Colour of Exhibit**

2.20.1 The colour reflected from the exhibit to the visitors' viewing space

## 2.2 2D Objects

- They differ significantly from 3D objects because our visual perception will be different

- In 3D objects we are differing or identifying distance or depth through the convergence of our eye

- In 2D objects where is an inner depth, inside the object or picture or painting or compositions or graphic collage, or structure. Therefore, we must divide the items into two different groups: (A) Pictures and, (B) Verbal and Graphic Symbols.

2.21 **Pictures**

2.21.1 painted (on the wall)

2.21.2 printed

2.21.3 photogrpahic pictures:
- prints
- slides
- slide mosaic
- collages

- Because perception of the above three categories is different according to the category, brightness and contrast of visual fields, the sense of structural geography, and the sense of space elements will also vary.

- Also, the visual reading time for each of these categories will be different.

2.21.4 Cinetic pictures:

- painted
- printed
- projected - in a condensed field of a screen - i.e., film or television.

In all of the above elements we are noting:

- **Size** - average size

- **Length** (in time) - If there is any vertical information cascade like in film or television, it must be noted. Its duration or the length of the cinetic picture in time (minutes or seconds), should also be noted.

- **Position** in the Visual Field - This is very significant because of the high information delivery of any visual structure.

- **Arrangement or Angle** - How the items are positioned toward the visitors.

2.22 **Verbal and Graphic Symbols**

- We are first differentiating between:
  - painted or printed graphics
  - projected or reproduced graphics
    - density
    - brightness and
    - contrast of elements

- In any graphic symbols we are differentiating between:
  - words and
  - abstract or drawn graphics

## 2.23 Colours of Objects, Areas, Compositions

- We are generally stating what the colour range of the object or surrounding areas appear to be. In this analysis the colours of background walls or the colour of compositions, mosaics, or collages are included.

- We also include the colour of performances and live displays and the prevailing colours of mosaics.

## 2.24 Sound

- We are stating the average sound level or intensity and the approximate sound spectrum.

2.24.1- 2.24.4
We must differ background noises, or background program noises, speech, music or background songs or sounds coming from functional spaces.

## 2.25 Light

2.25.1 **General** light - first we must scan the place and see what the general lighting is like.

2.25.2 **Modelled** light - pay special attention to modelled light which is usually a spotlight or directed light which is concentrated on a certain area on certain exhibits.

2.25.3 **Daylight** - consider it coming through the windows
- notice direction of the light
- approximate its intensity

2.25.4 **Function of darkness** (black-light) - important to mention the function of non-existent light or darkness because this sometimes conveys a very important message in the juxtaposition between darkness and any lighted object.

2.25.5 **Coloured-Light** - express in colour tempetrautes or hue.

2.25.6 **Cinetic** (moveable) Light - describe the pattern and arc of movement.

**N.B.** - Best possible documentation: (see appendices)

1. data in physical units

2. drawings

# 3.0 PART III: BEHAVIOUR OF INFORMATION COMPLEX

3.1 **Behaviour of Information Source**

3.2 **Behaviour of Receivers**

3.3 **Transmission Conditions**

- Pay major attention to the process of information exchange between the information source and the receiver.
- How is the process of information exchange begun, carried on, and factually transmitted to particular places, elements, people, viewers and/or visitors?
- How is the information source perceived by the people ?
- How does the information source affect the possible course of the possible reactions of the visitors?

(See examples of time/space notation diagrams in the appendices)

**TWO MAJOR SCOPES:**

## 3.1 BEHAVIOUR OF INFORMATION SOURCE

What is the type of program the information source is providing for any receiver, visitor, or viewer which means:

- the day during which visitors are coming to the information source and perceiving it.
- the day during which the information process is going on ?

i.e., the process sometimes starts in the morning and finishes in the evening; or sometimes it goes on fluently for twenty-four hours; or sometimes it is segmented on small elements such as minutes or seconds of a particular action of sale or information exchange or information delivery.

3.11 **Program** - This is the first component.

3.11.1 **Length** - opening hours; sometimes includes the type of services the information source is providing.

3.11.2 **Size** - in the sense of space, on which program is happening .

3.11.3 **Parts** - any type of small independent actions you could differ in the program's composition.

3.12 **Structure of Program**

- Overall view of the parts of which the program is consisting.

- **Examples**: In a shop, the structure of the program consists of smaller parts such as actions when customers and salespersons come into contact, or it may consist of the independent actions of a salesperson for the improvement of his store, or it sometimes consists of the independent actions of the receivers coming into the store and browsing.

- In a museum or exhibition environment this could be a program structure which consists of ongoing models of the exhibits. It may also consist of scheduled walks or scheduled talks about the exhibit, or of the demonstration of some process in the technical museum.

3.13 **Components of the Program**: List the proceeding of program

3.14 **Formal Parts of Program**

- Requires the factual determination of the nature of the action performed by the information source.

- Examples:

  - what a salesperson is doing during one hour of work

  - what a museum demonstrator is doing during his program

  - what the program is factually performing without any help from human elements.

3.15 **Functional Parts and Components of Program**

- Any part which is directed toward the viewer, visitor or customer and which has some kind of function. i. e., function of performance or services provided for the visitors.

3.16 **Cinetic Components**

- Special components which are moveable or are moving in a time or size space scale.

3.17 **Human Components**

- Are those directly connected with the human activity of the information source. i.e., demonstrator, informant, receptionist, etcetera.

3.18 **Automation Components**

- It has a closed program structure directed by submission. It is usually programmed.

3.19 **Feedback Components**

- The parts of the program which urgently need the interaction of people or receivers. (i.e., game machines)

## 3.2 BEHAVIOUR OF RECEIVERS

3.21 **Length of Perception (or visit)**

- How many minutes, hours, seconds ... people spend before one showcase, one exhibit, or in one room, one museum, part of street, park department store actually perceiving the space.

3.22 **Structure of Perception Time**

- The parts which compose the structure of the perception time.
- Example:
  - One minute of walking along the stariways, forty seconds of staying before the showcase, forty seconds walk to next showcase; ten second stay before sculpture.
  - Twenty-five second walk toward wall,
  - Two minutes sitting in a chair looking at a picture,
  - One minute on the details of the exhibited jewellery,
  - One minute walk to the opposite wall.

(See examples of time notation diagrams in appendices)

3.23 **Activity Points**

- During the strucutre of the perception time, you will notice that some parts are spent actively through the actual perception of an item.

3.24 **Passivity or Rest Points**

- This includes time spent walking from one place to another so as to find something, or time spent not perceiving at all, resting, conversing with other visitors.

3.25 **Density of Receivers**

- How they are moving and in which directions ?

3.25.1 How many on an average in the space ?

3.25.2 How many on an average are there in time ?

3.26 **Fatigue**

- Occasionally people will show signs of fatigue by not looking on the exhibit booth or resting (Note this time if it is applicable).

3.27 **Exterior Effects (motoric)**

- These include motoric effects, such as laughter, even disturbing effects which we could spot by the receivers or people.

- The best way to approach the behaviour of the information source or receiver is by a timing diagram which you could draw on the floor plan or express by way of a table which states the facts you could find on the people or information source.

  (See diagrams samples in appendixes)

## 3.3 TRANSMISSION CONDITIONS

- Some areas have more attention paid to them than others.

- These areas which are important for the perception of a given space of the information complex are known as fields. We are therefore talking about certain visual, audio, or other sensoric fields.

3.31 **Visual Fields**

- fields of vision which are perceivable from a given spot.
- usually in the exterior of the information complex there are many visual fields

- Major visual fields = where we are when we first spot the information complex. It is comparable to the television long shot.

- Between the first major visual field and a detail one in the information complex is usually where you find the best spot for observing the complex.

- Close-up = this is a very detailed close look at the building and it is equivalent to a television close-up shot.

- The same procedure should be followed for the interior visual fields of the information complex. ie., First, from the entrance door, we have a general outlook on the room (long shot), as we approach the point of interest and somewhere along the line of our work we will come to the **middle distance**, and then we examine much more closely the object which interests us (close-up).

- We must, therefore, refer to the:

3.31.1 **Number** - the number of fields within a given space.

3.31.2 **Size** - measured in degrees.

3.31.3 **Semantic components** - names of the items in the visual fields.

3.31.4 **Structure** - Angles of the VISUAL FIELDS.

3.31.5 **Formal Components (number and character)**

- items or information forms appearing in any visual fields i.e., geometrics, density, colour and 3D components.

3.31.6 **Position to receivers**

- position of these components toward us and toward the recievers
- the factual projection of item arranged in a given space from a given visual field.

3.31.7 **Axonometry of Visual Fields**

- a perspective sketch of a given visual field

3.32 **Audio Fields**

3.32.1 Spacing of sounds in the location and the sources of the sounds.

3.32.2 Number - of different audio fields

3.32.3 Intensity - of the sound in decibels (dB)

3.32.4 Structure - of the visual fields given by the space.

3.32.5 Spectrum - audio spectrum emanated in the given audio fields
- what are the sound sources that make up the sound heard, human, music, mechanical, etc.

3.33 **Sensoric Fields**

3.33.1 **Smell** - note nay characteristic smell that may be apparent.

3.33.2 **Touch** - note any behaviour of receivers involving the sensation of touch.

3.33.3 **Taste** - note in cases of the consumption of food or beverages.

3.33.4 **Vibrations** - note if they are influencing the behaviour of receivers.

## 4.0 SEMANTIC SUPPLEMENT

4.1 Ideas of Object or information complex may influence the general behaviour of the receivers (it is different in a church compared to a discotheque).

4.2 The relationship of ideas to information aids used and their forms, the way of information transmission may dictate the forms used.

4.3 Relationship of ideas to sensoric fields. Both are connected and may influence the information impact of the complex or information source.

4.4 The pure ideological influence of the themes could manifest itself in the purpose of information complexes.

4.5 In some cases a connection always exists between **form** and **content** and this kind of connection will significantly influence the delivery of messages.

## Final Compilative Report Note:

- The final report can have a form of written report following the key points of the Basic Classification of Elements for Communication Analysis, with enclosed drawings, floorplans or your own sketching.

- In the third part you can supply time diagrams of a visitor's walk or the program of the information complex, or a diagram with measurements, with statistical data about the visitors or receivers perceiving our information complex, etcetera.

- Consult with the professor of the course for examples of past projects, or suggestions for the documentation of specific parts if you are uncertain. Also, review the appendices at the end of the text for the notation techniques of specific aspects of the project. Above all, it is important that the information in the final report be clear, concise, accurate and well organized throughout the work.

  It is **not the quantity** of the information which you provide that is important, **but the quality**.

# 5

# Communication Analysis Protocols For Visual and Audio-Visual Information Complexes

**These studies are completed by students with previous knowledge of the praxis of Communication Analysis. They are also useful for students in advanced courses of Analysis and Media Design**

# COMMUNICATION ANALYSIS OF A PAINTED PICTURE

## I. Analysis of the Information Source:

A. General Analysis of Form: - dimensions
- spectral range and scale
- performance technique

B. General Analysis of Content: / Semantic Information Parts /

C. General Analysis of Structure: / levels /
- diffusion
- differentiation
- integration

## Ia: Communication Aids:

### A. Space Visual Orientation:

- identified elements / position, relation, arrangements/
- axis: orthogonals
  diagonals
  irregular axis
  complementary axis
- main geometric elements in picture
- main angles in geometric elements
- areas / patterns /
- plans
- axonometric arrangement

### B. Basic Visual Qualities:

- contrast: ratio
  range
  difference / scale steps /
- brightness: / max-min /
  intensity / grey / scale /
  range
- spectral ranges of main areas / patterns /
- chromatic steps / differences /
- colour temperature

### C. Syntax Qualities:

- visual grouping : weak - proximity
  - similarity
  - common movement
  strong - continuity
  - closure

- visual separating: mosaic- size
  - grid
  - geometry
  - elements
  - relation between elements

depth - contrast separating
- overlap
- size perspective
- linear perspective
- aerial perspective
- light-shade separating
- space filling
- moving objects
- fixation
- distortion

- visual integration: / Gestalt-principles /
  - naturalness
  - figure-ground
  - articulation
  - good-poor forms
  - strong-weak forms
  - open-closed forms
  - dynamic basis
  - persistence of form
  - constancy of form
  - symmetry of form
  - integration of form - similars and adjacents
  - meaningfulness of form
  - fusion of form
  - transportation of form

D. **Theme Transposition Qualities:**

- position to: main object
  horizon
  main picture axis
  main action axis

- optical transformations: visual angle
  general sharpness
  perspective deformations
  shape deformations
  other linear deformations
  optical effects / illusions /

- lighting climax of picture:
  - form of lighting / day, artificial /
  - direction of lighting: - front
    - side
    - back
  - brightness of lighting
  - concentration of lighting:
    - direct
    - indirect
    - diffused light
    - spotted light
    - absorbtion / reflections in picture

- colour of the lighting: - brightness
  - chroma
  - colour temperature
- shadows: - ratio of contrast
  - grey scale
  - colours

E. **Secondary Reproduction Qualities:** /Printing,Reproducing,Painting/

- changes in geometry
- changes in contrast
- changes in texture
- changes in colours: brightness
  chroma
- reproduction changes / negative-positive / Master-Reproduction /
- size changes / enlarging /
- environment changes

## Ib. Communicaton Styles:

- identification style
- characterization style
- evaluation style
- prescription style
- relating style

## II. Analysis of Transmission / Performance / Conditions:

A. **Visual field:**

- size
- angle
- composition
- structure
- determinatives: frame of visual field
  frame of picture: geometry
  size
  colour
  sub-elements
- background : brightness
  size
  colour
  contrast ratio
- position of picture in visual field
- juxtaposition of elements

B. **Observer:**

- position to the visual field
- angle
- axis
- axonometric position / 3D/

C. **Climaxes**
- Lighting : of the visual field
  of the picture
  of the background
  direction
  intensity
  structure
  reflected light
  absorbed light
  colour: chroma
  temperature
- Sound : intensity
  level
  spectrum
  reverberance
  form / noise, music, voices /
- Temperature: of visual field
  of object
  of environment
- Other sensoric climaxes / smell, touch, taste /
- Spacial orientation / distance for viewing /

D. **Indirectional Visual Communication**
- titles
- captions
- graphic
- words: printed
  projected
  spoken

## III. Receiver / Conditions of Perception /:

1. Time scheme of observation
2. Syntax of observation
3. Indentification process:
   - brightness and contrast phase
   - geometry phase
   - form identifications
   - colour identifications
   - space orientation
4. Generalization Process
5. Simplification Process
6. Basic Elements of Picture / reflexive memory /
7. Space and time of perception process
8. Factors for secondary information space: demographic factors
   psychologic positon
   physiologic factors
9. Retension factors / fatigue /
10. Secondary space impacts: theme / syntax
    form, domains
    aids, tools
11. Motivation influence
12. Secondary reflections / in primary perception phase /

# COMMUNICATION ANALYSIS OF A PHOTOGRAPHIC PICTURE

## I. Analysis of Information Source:

A. **General Analysis of Form:**
- dimensions
- spectral scale
- performance technique

B. **General Analysis of Content: / Semantic Information Parts /**
- Theme
- Story

C. **Analysis of Communication Aids:**

1. Architecture of Picture / selected reality /:
   - identified elements / positions, relations, arrangements /
   - main axis: orthogonals, diagonals, irregular axis
   - complementary axis
   - main geometric elements of picture
   - main angles in geometric elements
   - areas
   - plans
   - space arrangement / axonometric elements /

2. Visual Qualities / of selected reality /:
   - contrast: range, differences, scale steps
   - brightness: intensity, range
   - spectral ranges of main areas
   - colour temperature of main ranges
   - time range / speed, changes /

3. Recording Process:
   - position of camera to: main object, horizon, main picture axis, main action axis
   - optical transformation:
     - focal length
     - sharpness field
     - perspective deformations
     - other linear deformations
     - special optical effects
     - exposure technique
   - speed of recording to: real speed of action, movement of camera

- lighting: form of lighting: day-light
  artifical light: permanent
  flash-light
  strobo-light
  direct light
  indirect light
  diffused light
  spot-light
  direction of lighting: front
  side
  contrast
  moved light
  combined lighting
  intensity of lighting
  brightness / to the object /
  absorbtion and reflection of light in the picture
  colour temperature of light source
  of reflected light
  shadows: contrast
  grey scale
  colours

4. Laboratory process:
   - negative process: changes in negative basic
     changes in developing proces
   - positive process: changes in positive bases
     changes in printing process: light / exposure / geometry
   - indirectional changes / solarisation, double-exposure, etc. /
   - changes in finishing
   - colour changes / balance /

## II. Analysis of Transmission Conditions:

- visual field: composition
  place of picture in visual field
  background: brightness
  size
  colour
- position of picture in visual field
- position of observer: angle
  axis
  axonometric position / 3D view /
- projection conditions: distance for viewing
  angle
  lighting: direction
  intensity
  spectral characteristics
  form of lighting
- indirectional visual communication:
- visual communication: title / work / graphic

# COMMUNICATION ANALYSIS PROTOCOL FOR FILM / VIDEO INFORMATION COMPLEXES

# COMMUNICATION ANALYSIS OF FILM / VIDEO

I. **General Analysis of Form:**
   a. length of film/video
   b. size of film/video
   c. performance technique

II. **General Analysis of Contents:**
   a. theme
   b. story
   c. literary syntax

III. **Analysis of Communication Aids:**

**A. Photographic Picture:**

Picture Composition:
- elements / position, relations, changes /
- shapes identification
- brightness intensity
- colour temperature

Recording Process:
- position of camera to: main object
  horizon
  main pictaure axis
  main action axis
- optical transformations:
  - focal length
  - sharpness field
  - perspective deformations
  - other linear deformations
  - special optical effects
  - exposure technique
  - speed of recording to: real speed of action
    speed of performance
  - movement of camera: horizontal
    vertical
    axonometric movement

Laboratory Process:
- changes in: negative base
  positive base
  colour balance
- changes in printing process
- changes in chemical process

**B. Colour:** colour **scale of**
- base
- props
- set-up
- actors/ masking /
- lighting

colour: **compositions** - of picture
- of scene

colour: **changes** - in picture
- between the shots / colour editing /

**C. Sound:** noises: real noises - of requisites, things
- of natural sources
- of organisms

artificial noises
background noises

music:
- programmed music
- songs
- composed sequences
- melody sequences
- programmed music without structure

voices:
- of animals
- of mechanism
- of people

speech:
- intensity
- intonation / voice spectrum /
- density of parts / speed of speech
- density of information details / semantic density /
- tonality of speech

acoustic conditions:
- of real space
- of imitated space
- of artificial space

## IV. Design Phenomena

A. **Architecture:** exterior - landscape - natural
- artificial
- imitated

- buildings - historical
- symbolic
- abstract structures

- requisites - real
- maquettes
- symbols

interior - space architecture and set-up
set-up - real
- abstract
- imitated

furniture
props
finishing

B. **Costume Design:** - forms
- materials
- modes
- performance conditions

## V. Actions Phenomena:

A. **Actors Play:** - body positions
- body movement / walking, running, staying, fighting etc.
- face movement / masking, changes /
- interplay

B. **Animals Play:** - body movement
- interplay with actors

C. **Things Play:** - positions, movements, connection with actors

## VI. Form Syntax Phenomena:

A. **Editing-** general
- cuts
- sequences
- type of cuts
- bridges

B. **Synchronisation:** - audio-visual schema
- synchron
- post-synchron
- playback
- irregular schemes: programmed
with free connections
with no connections

## VII. Conditions of Perception

- time scheme of performance
- time syntax of performance

- performance system
- performance space

- size of percepting group
- demographic structure of group
- psychologic positions of group during the performance

- reactivity of group
- fatigue / from exterior sources /
  from performance information source /

- primary impact:

  parts without exterior reactions

  parts with medium or short reactions
  without delay

  parts with external long reactions

- secondary impact:

  of theme

  of syntactic details / story-line /

  of formal details

  of domains

  of aids

# 6

# Communication Analysis of Sound Information Complexes

# COMMUNICATION ANALYSIS OF SOUND INFORMATION COMPLEXES

**Perface:**

Communication Analysis is a tool for the perceptual assessment of existing sound information complexes. A **sound information complex** is an established sound reality, perceived by one or many humans in a discrete time and environment. This could be a musical piece performed before a group of listeners in a concert hall, a recorded radio program heard from a transistor radio on a park bench by only one listener, or the sum of natural sounds heard by a hiker during a mountain walk, or the recitation of a poem in a classroom.

Analysis takes into account the physical, formal and behavioural properties of sound information complexes and searches for scientific data, determining the information impact of it.

Communication analysis is a first step toward the later measurement of information impacts of sound complexes.

The practical application of such an analysis can be found in exhibition displays and museum designs, film and television production or in urbanistic acoustical studies.

**Sound Information Complex:**

A Sound Information Complex usually means a piece of reality where the sound aspect dominates, e.g., most of the information input happens through the aural sensor (ear), or when the interaction between humans happens on an aural level.

The degree of channel capacity determines the nature of sound in a sound information complex. Pure sound information complexes are those where the majority of information is only sound (radio program heard via earphones by a listener, eg. the solitary listening of stereo music). There are many sound information complexes where the environment (**sound space**) is involved in the final information delivery to a human ear. There are also sound information complexes that are precisely formed and coded to a certain function, conveying important, usually short-timed messages to the users. There is a special kind of sound information complex, where an outer source or environment is absent, e.g.,meta-sound information complexes. These are sounds, songs and voices projected in the human mind, without vocalisation.

There are basically three kinds of phenomena occuring in the sound information complex:

1. Physical phenomena
2. Formal phenomena
3. Behavioural phenomena

**Physical Phenomena** are those that constitute the static, material portions of information. Some sound information complexes are bound to specific physical features of the source (instrument), or environment (space), or of receivers (specific sensitivity of listeners group to certain spectra ranges). Other information complexes may have physical phenomena that are very limited in matter and unattached in the view of information syntax and structure (recorded song on magnetic tape.)

There are primary and substituted physical phenomena. **Primary** phenomena are those perceived directly by the consumer of the information, eg. (orchestra perceived in a concert hall, mass in a church). **Substituted** phenomena are those transmitted via other humans, or human-machine interactions (radio programs, recorded music).

**Formal Phonomena,** are those which directly influence the perceptual process and the manner in which the sound complexes are perceived by humans. They closely follow the extent and ability of human aural perceptional channels. They determine the style, mood and climax phenomena, and much of the artistic originality is based upon them.

**Behavioural Phenomena,** are those which refer to the process of communication, or syntax of sound information complex, with the main emphasis on human interaction. In a vulgar sense, it means how a human "understands" the musical piece, song or sound. They correspond broadly to the human motoric and expressive activities, either of the perceiver or performer. Some sound information complexes are very dependent on such a phenomena (rock concert with group interaction, dance in a discotheque, religious procession with chants).

Each sound information complex is basically a carrier of various contents and messages. It is important to know that in sound/music, those messages or contents are not codified in the same way, as in literature, drama, film or television. The major information impact of sound in the human brain occurs on a catalytic level, as a stimulation to a very different and specific neuron circuitry responses. Therefore, for example, hearing the same musical piece could lead to the thinking of very different specific contents (dependent largely not on the information sources, as on the receivers capacity for memory and past experiences). Also, the temporary axis of sound and the syntax of sounds only

vaguely follow the syntax of speech and logical thinking. There is much more involved in the stress wave neuron impacts, which are the basis for creating "feelings" and "emotions".

A sound information complex is basically a time chain, with three major succeeding components:

**1. Information Source----2. Transmission Environment-----3. Responding Receiver**

For a long time it was believed that the sound information source (the music score, recording) contained all the contents, messages, emotions fixed in tones, in specific performer's skill or instrument timbre, and that was exactly what the audience or the listeners perceived. Now we know that the sound information souce carries only part of the information content capable of starting a catalytic processes in the cortex of the human brain.

A sound information source could range from a natural or even accidental source such as the wind, the sound of a stream, of an insect,etc., to the fully artifically created source such as a musical score, or computer program for a sound synthesiser.

A sound information source is usually fixed in:

a. The score b. The instrument c. The performer

Each part of a sound source "fixation" can contribute highly to the actual sound information content delivered. In the past, great care was given to the manufacturing of specific instruments, codification of sound intents of the composer (musical notation), and to the education of specific mental-motoric skills of the performer. At the present time, more studies are carried on about the specific impact of recorded, amplified or electronically produced sources, instruments and the performers ability to manipulate them.

**The Transmission Environment** that of a, concert hall, the shape of a church interior, the loudspeakers in a radio, tape recorder and TV set were long believed to be only a set of given acoustic rules and properties for the best undistorted transmission of the sound information source content and messages to the receiver or to the destination, (on-air radio), without a specific information molding role. This is true when the sound information complexes are performed and perceived in one time period. The transmission situation can change certain perceptual norms or stereotypes which largely determine audience tastes and aesthetic judgements. Repeated stimulation, conditioning of sound perceptions due to the environmental phenomena could also substantially change the content of information or distort it. Most of these distortions are not cognitively understood by the audience, and can range from subliminal perceptual impacts to the creation of sound archetypes.

**The Responding Receiver** (the listener, audience of a concert or radio program) was believed to be a passive consumer of the sound information and the source content of the messages. This is far from true. The quantity and structure of the sound information delivered is actually very different from the sound information perceived, and even more different from the sound information processed and retained by the human mind. Usually, only a very small part of the musical piece, or song is retained in human memory. The extraordinary power of the human mind to reprocess, enhance and restore the parts of heard sound information content, is giving way to the endless variations on a given theme - the previously delivered sound information source content in a broad framework of the theme, melody, figures or the rhythm of a piece.

A time element plays an immensely important part in any information complex, more so in a sound information complex, where we usually refer to the rhythm. The rhythmical stimulation is a powerful tool for the uniting of the pace of sound information sources with the perceptual curve of a listener. Sometimes, it takes a certain amount of time to attune the listener to the rhythm of the composition (one reason why overtures were set before an opera began), other times the rhythm has a fast, immediate effect on a certain group of listeners (jazz rhythm on youngsters).

Usually, we distinguish two time axes in a sound information complex. The **Horizontal** time axis refers to the time elapsing forward (progression of a musical piece). The **Backward** time axis occurs in a sound information source when you remember a certain melody or tune. In this case, a saccadic reversal occurs - you remember the piece back in time, but retrieve the tune in a forward manner.

The **Vertical** time axis, refers to the density of the sound information in a given time unit and fills the capacity of a sound perception channel. The consequences of a channel overload or improper spacing are well known to composers of music.

In view of the time structure of a sound information complex, we can distinguish between the unprogrammed, the partially programmed and the fully programmed sound information complex. The **unprogrammed** sound information complexes are such where the information untis are delivered in a random manner (the sound of a stream in a mountain valley). **Partially** programmed sound information complexes are such were the information exists more or less defined, but they are repeated without an apparent structure, or a structure that is unintelligible to the receiver. (a bird's call, the noise of a city street).

**Fully** programmed sound information complexes are such where the receiver must follow the perscribed succession of the information units, or otherwise risk the loss of the content or messages (classical or modern music, song).

The timing in a sound information complex plays an important role in the delivery of sound information loads. This is the collection of sounds delivered per one perceptual time unit. Usually the pacing of a musical piece follows the rhythm and listeners possible adjustments to this rhythm. It is usually far from a conceived unit or bar or figure. A perceptual time unit is highly dependent on the capacity of a second level of the short term memory of receivers. This capacity varies with the culture, age or sound memory differences in the audience, and it is loosely connected with the ability to recall (memorization) the piece.

A sound information overload may happen at two major points: either by the overloading of the vertical time axis of the complex, or by the distance between syntactic and formal phenomena toward the perception abilities of the audience or listeners.

Within the time frame of a sound information complex, as seen from the receivers side, we can witness the sound information complex impact (quantity of catalytic changes in human neural system after the reception of sound information from a complex).

**The Measurement of Sound Information Impacts**

This area of research entails a search into the information impact of sound on human beings and consists of a series of specific tests, performed via the use of multi-channel biometric (psychophysiologic) instrumentation (EEG, EKG, GSR, channels), while a person perceives specific sound inputs. There are several basic presumptions, which must be observed in order to correctly interpret the test registrations:

1. Every person (psychophysiologically), receiving a sound information input is different, and could have a specific response. Therefore, averaging of respones is possible only under special circumstances that arecorrelated with pre-tests.
2. Transmisison conditions of sound information could vary, even if the environment is physically the same.
3. All results of tests are of a cumulative character, therefore there will always be some response present, which does not correspond directly to the stimuli.

In order to minimize the disadvantage of testing live persons with a constant change of information flow in his/her mind, several rules should be observed:

1. When a test is made, a precisely programmed pre-test must be administered. This will be the key to the further diagnosis of graphical test registrations. The stimuli for the pre-test must be as natural, as simple and as similar for all the tested subjects. It should not be rigedly formal (such as a scale, or different frequency ranges), but should follow the pattern of the tested sound information complex (loosely following the tune, melody, rhythm).
2. Any changes in a persons' external behaviour must be recorded on the test, as well as any change made by instrumentalist in adjustment of apparatuses during the testing period.
3. The test recordings should be verified by a battery of stimuli related questions and coded on the test strip. If the verbal and directly extracted responses differ or conflict, the test should be repeated.
4. All tests should be diagnosed comparatively cued by the time log of stimuli input.

The number of channels used in testing is determined by the reason of the tests. For example, testing of tones, sounds derived from a synthesizer for future use in the composition of a piece could be tested on a single channel biometric set-up (preferably EKG or GSR). Also, during the composition, testing of figure or melody could be done on a single channel testing. But, every time we test the information impact of a sound complex (full musical piece, song, radio program) multiple channel recording is most appropriate.

**Single Channel Tracking**

The best set-up is a combination of a soundmeter, audiospectrograph (real time PDP 11/45 computer complex), cerebral EEG and a chart strip recorder. In this case ,two analytic processes are recorded: the process of sound information source and processing the sound information input in the neocortex of the brain. The result is a triple-graph, where the amplitudes, spectral characteristics of sound and audio input characteristics of the EEG are compared via masks from the pre-tests.

**Multiple Channel Tracking**

When complex sound input occurs, with the presence of a specific sound space and receivers stereotypes (audience taste), it is advisable to use more channels for simultaneous tracing and verification of the sound information impact. The best set-up is a combination of the input track (EEG), and several processing feedback channels (EKG, EMG, GSR, BSR) using the time log of the stimuli as a starting point of the pre-test mask setting.

In this case, the EEG duplicates the input channel, an EKG is the indicator of stress wave development, the EMG is a channel for the control of immediate responsive characteristics, GSR and BSR are cumulative responsive characteristic indicators. The time lapses between channels read vertically and compared with the pre-test mask are a control of the follow up of the same sound information input.

There are several difficulties in multi-channel biometric recordings:

1. The processing intensity in the neocortex of the brain varies highly from one test subject to the other. For this later comparison, pre-amplifiers and filters are often used. But, with amplyfying or filtering the signal, more noise is involved in the signal and occasionally the specific spikes are filtered out.

2. The proceeding of sound information on a short term memory (time) basis varies highly from person to person. Therefore, for different people, when spotted in a pre-test, different speeds of recordings are used. However, with the use of higher speed, some characteristics of signals are increased in false amplitudes.

3. A mask that resulted from a pre-test is valid for a relativley short time period. From experience when testing lasts more than 30-40 minutes, the pre-test should be repeated and the mask corrected.

**Specific Tests:**

A number of specific tests can be performed either on the preparatory sound material or on the finished artwork. Each test could help the artist in a different decision or phase of production.

1. **General Input Test:**

This is a test, where we run a series of preparatory sounds, figures and tunes for a selected sample of audience and record the multiple channel reactions. It is the easiest test, but also the least decisive one. Serveral points are important:

A. During the pre-test, the duration, form and performance of control stimuli should be relevant to the majority of performed pieces,

B. The test should follow the pre-test as quickly as possible,

C. When the initial input channel is steadily diminishing the amplitude, signifying the rising fatigue of test subjects, the test should be stopped for re-run.

During the diagnosis, not the isolated spikes or one channel input curve is searched for, but the cover curve of all channels is significant. The result usually starts to indicate to the composer the general input slope, general processing times and places of "domains", places or segments of high response.

2. **Decision (Selection) Test:**

This is the test where we search for sound information "domains", places, tunes and parts of a melody which create unusually high responses in the audience. Those "domains" don't usually correspond with the persons ability to recall it or memorize it. This test is usually follows immediately after the input test. It consists of the performance of an isolated sound information piece with a short pre-test and post-test period (approx. 10-30 seconds). The diagnosis of this test must be done comparatively with the input test. If the results of domains are generally comparable with input characteristics, the strength of the information domain lies in the specific section. If there is a significant difference, the domain draws its strength from cumulative characteristics.

3. **General Processing Test**

This test is geared toward the information processing of certain sound stimuli. It should be composed from at least two channels: one, containing particular sensoric input tracking and the second from an EEG recording of 4 different regions of the brain, (cerrebellum, occipital and parental lobes, WC). A dignosis could be made either on a binar decision mapping or on a particular map of spectrograph of a sound piece. The main gain is the isolation of search periods.

4. **Stress Wave Test**

This test has a unique place in the communication analysis of music or songs. It is a combination of sensory input tracking, EEG channel as a time log of input and synchronized EKG channel. EKG electrodes should be placed within a small circulation circuit with a ground on the hand or chest. Usually, the stress wave development is shown as the main zero deviation of amplitudes within the 1-2 second range for the stimuli. The impact could be prolonged for several seconds but usually ceases very rapidly. If a bouncing effect occurs, usually the reaction protrudes into the EEG recording negatively.

5. **Reaction Tests**

These tests are performed if we wish to know the person's reactions or a desire to feed back to the sound information input. It consists of a sensory track, EEG and EKG plugged in as control channels, an EMG and GSR are the main recording channels. The EMG channel has a significance for the immediate responses, the GSR for culminative responses and BSR for typical invoked responses.

All of these tests are only indicators and not the proof of the information impact of a sound piece. For each part, the particular emphasis should have a different starting point. For example, if we are mainly searching for the information source impact (composition), the sample of audience should be selected from a combination of sophisticates to the average listener as a control group. If transmission conditions are tested the controlled design parameters of environment should be detectable in the pre-test stimuli. If the receivers attitudes are tested, the size of the sample, the stratification and demographic factors should be emphasized.

Most of the tests are designed for direct help before and during the production of the sound information complex. They serve the artists as a helping tool to relate his own impressions, feelings or estimates of the environment which do not enable the artists direct experience. The tests could also be used, up to a certain level, for job counselling and training purposes, to reveal skills, talent and abilities of a composer, performer and musical groups.

The least productive use of the tests is a post- produciton evaluation and marketing research. This role could easily undertake verbal, graphical or recorded tests well known from basic experimental psychology.

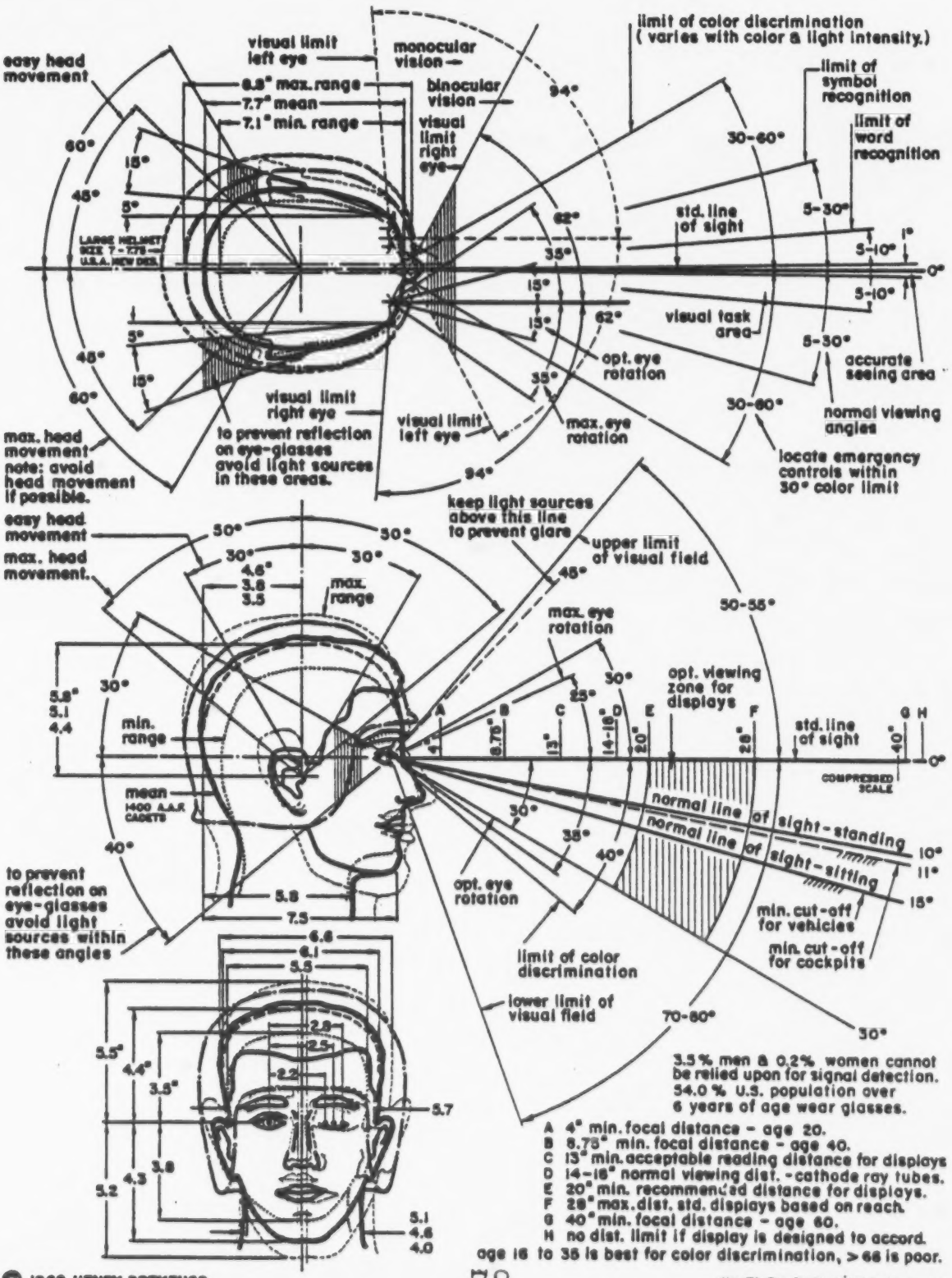
The main asset of the tests enable artists to associate themselves with the living sample of their future audience and the way in which these people will perceive the finished artwork, especially when there is very little perceivable or finished from the full piece. A specific asset of the testing startegy enables a composer of synthesized and computer music to quickly select pieces from a vast array of possibilities or pieces of sounds with certain impacts, thus saving them time and effort, fully implementing the placticity of human perception into the world of artificial sounds.

**Conclusion**

Communication analysis of sound implements certain aspects of system theory and cybernetics into the analysis of sound complexes performed in certain spaces before specific audiences. Psychophysiologic methodology and biometric testing units are used in advanced stages of communication analysis to extract data directly on information impacts from the cortical region of the brain. Numerous control channels are used for the verification of extraced data and pre-tests on controlled stimuli are served as a key for the diagnosis of a test.

# 7 Appendices

# Basic Visual Data:
# Sections 1.14, 2.00, 2.16, 2.21.7 and 3.31



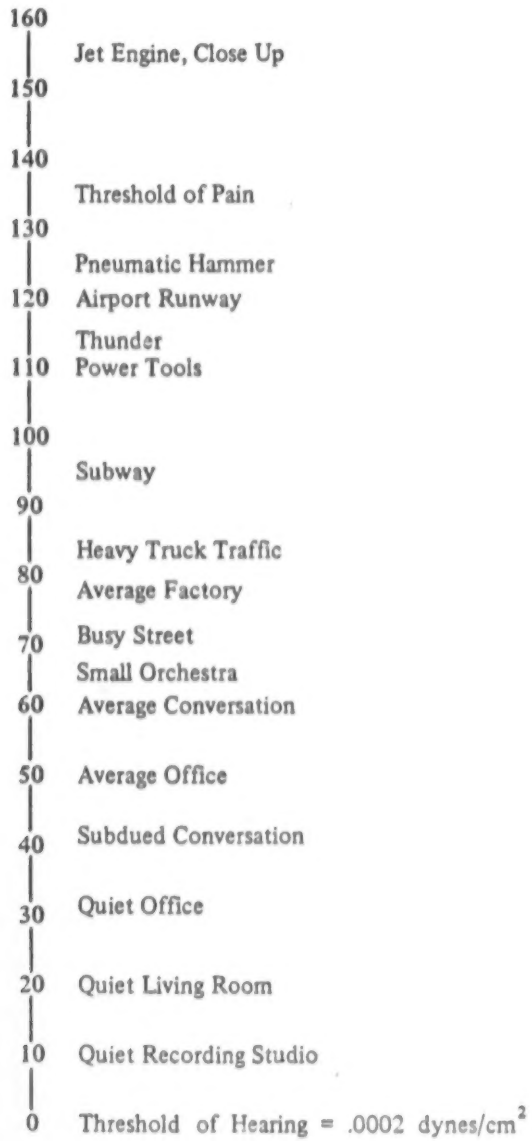

© 1960 HENRY DREYFUSS



WHITNEY PUBLICATIONS N.Y.C.

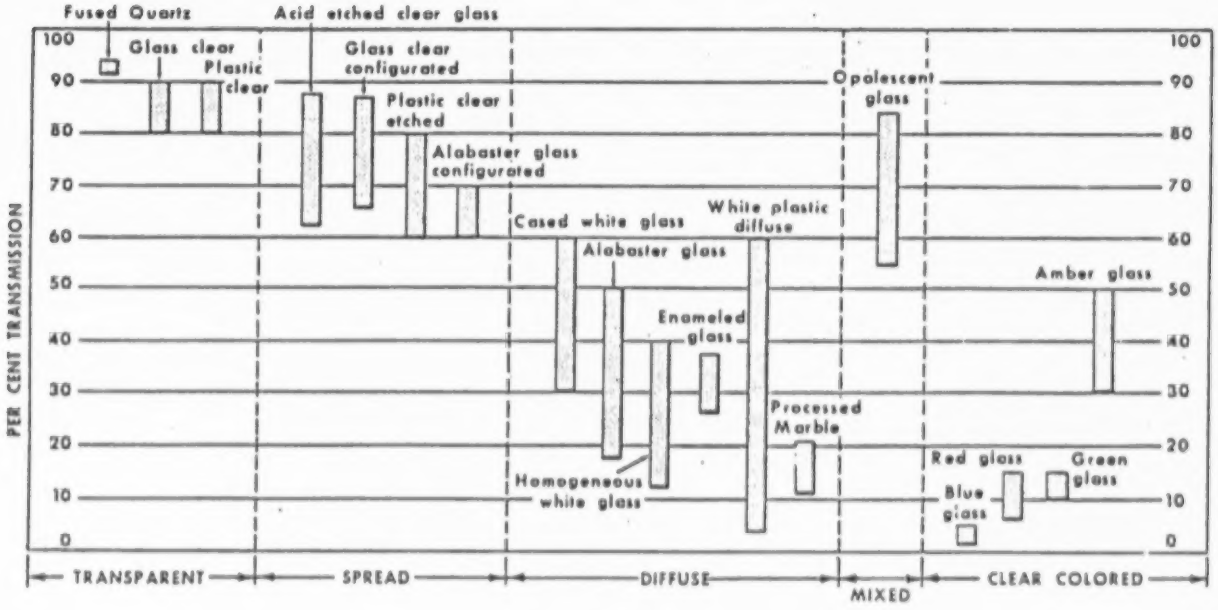
**Typical Sound Pressure Levels (dB)**

**Sections: 1.15.5, 1.25.7, 2.24 and 3.32**



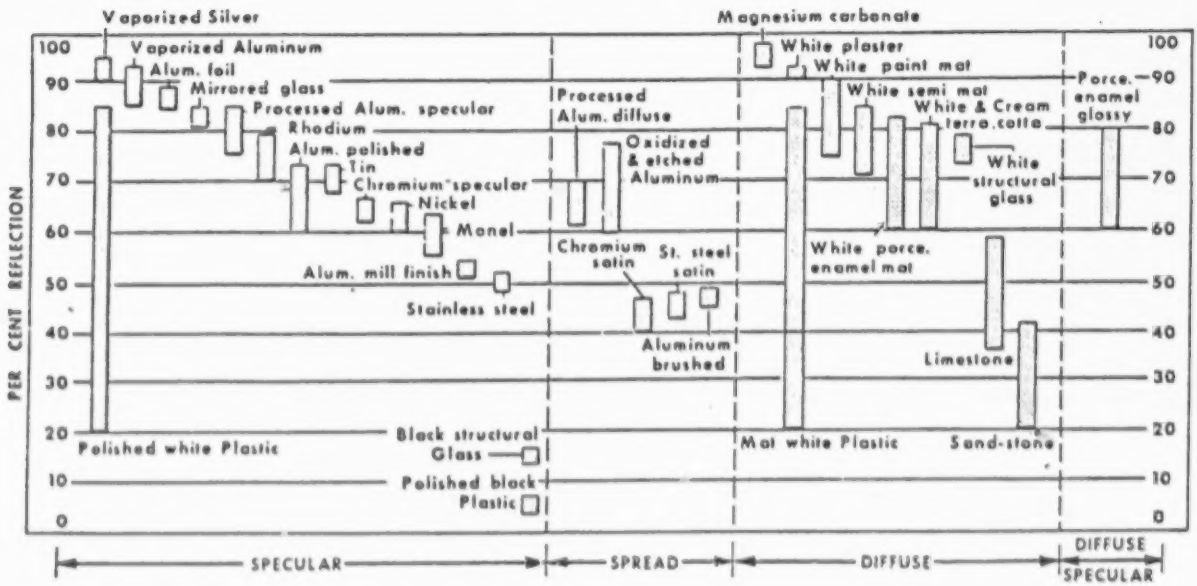
**Transmission Characteristics of various Materials:**

**Sections: 1.15, 1.25.4, 2.19**



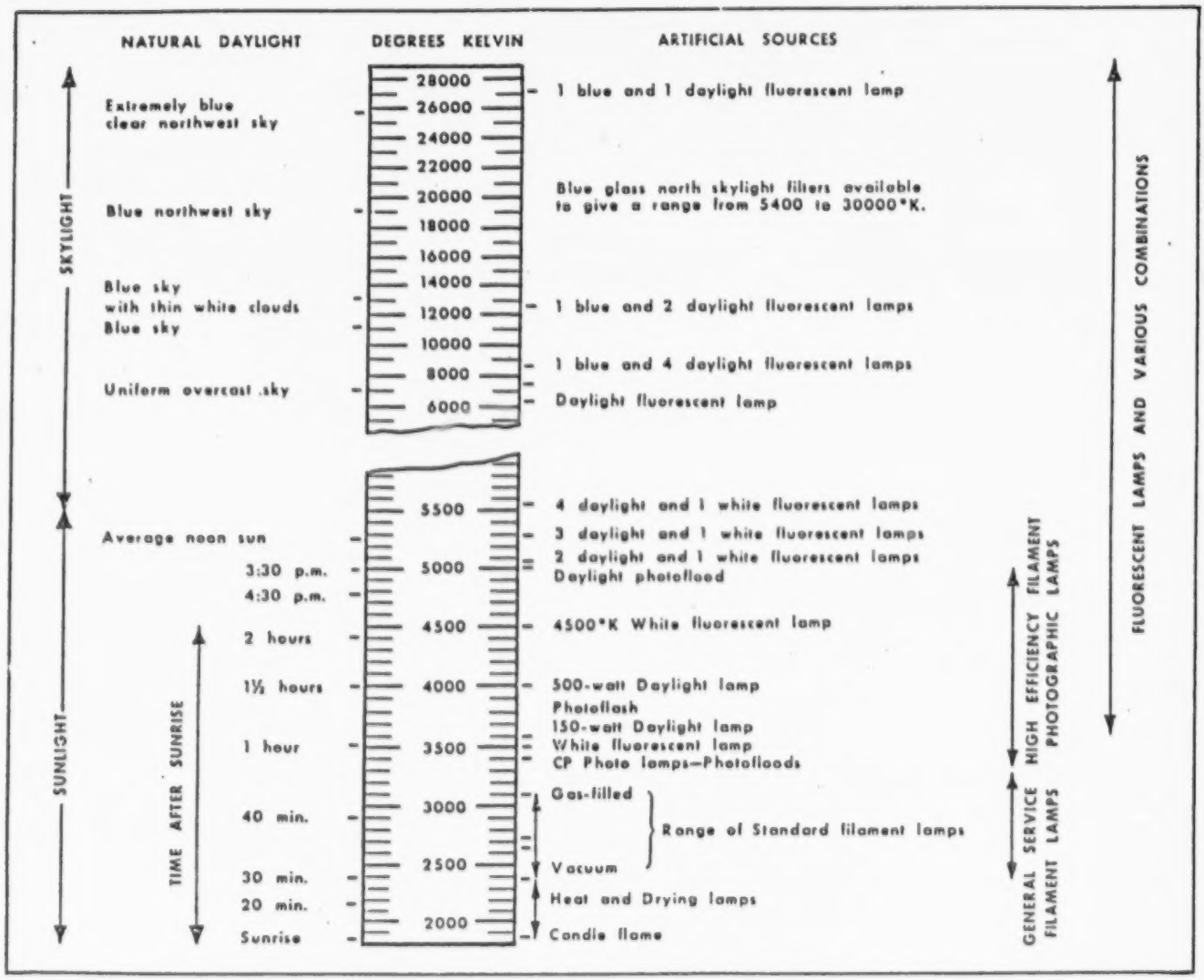
**Reflection Characteristics of various Materials:**

**Sections: 1.15, 1.25.4, 2.19**



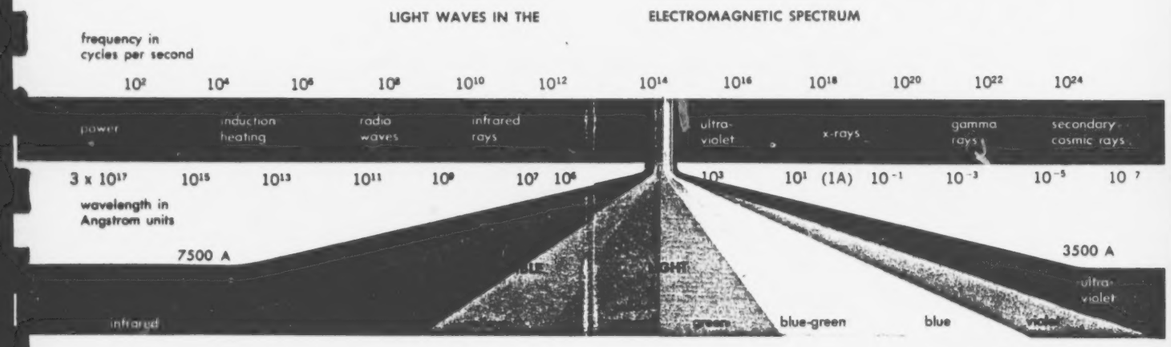
**Colour Temperatures of common light sources and combinations of light sources:**

**Sections: 1.15.4, 1.25.6, 2.18, 2.25**



## Light waves in the Electromagnetic Spectrum (colours).

**Sections: 1.15.3, 1.25.5, 2.19, 2.20, 2.23**




**VISIBLE LIGHT** is that portion of the electromagnetic spectrum that normally stimulates the sense of sight. Electromagnetic waves exhibit a continuous range of frequencies and wavelengths. In the visible part of the spectrum these frequencies and wavelengths are what we see as colors. The wavelengths of light range from 3,500 A to 7,500 A. The wavelengths of infrared rays (7,500 A – 10,000,000 A), longer than light rays, are not detected by the eye, and do not appreciably affect ordinary photographic film. They are also called heat or thermal rays and give us the sensation of warmth.

Because all electromagnetic waves are basically alike, we can expect them to behave in a similar manner. Differences are really but a matter of degree and are due to the differences in frequency. Light waves are unique only in their visual effects. The concept of color, for instance, has meaning only in reference to light waves.



**THE ELECTROMAGNETIC SPECTRUM**, shown above, covers all known radiation of which light is a small but important part.

The expanded visible portion of the electromagnetic spectrum is seen as a continuous gradation in hue from red through violet.




The wavelengths ($\lambda$) of visible light are what we see as colors. Red has the longest waves, violet the shortest.

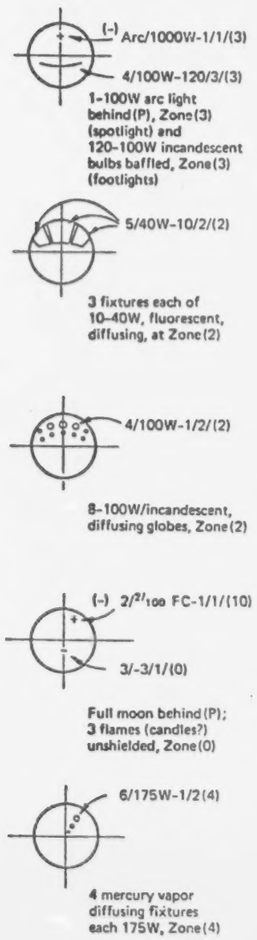






## Sample of notation for various light sources:

**Sections: 1.15.4, 1.25.6, 2.25**


(-) Arc/1000W-1/1/(3)
4/100W-120/3/(3)
1-100W arc light behind (P), Zone (3) (spotlight) and 120-100W incandescent bulbs baffled, Zone (3) (footlights)
5/40W-10/2/(2)
3 fixtures each of 10-40W, fluorescent, diffusing, at Zone (2)
4/100W-1/2/(2)
8-100W/incandescent, diffusing globes, Zone (2)
(-) 2/2/100 FC-1/1/(10)
3/-3/1/(0)
Full moon behind (P); 3 flames (candles?) unshielded, Zone (0)
6/175W-1/2 (4)
4 mercury vapor diffusing fixtures each 175W, Zone (4)

**Illuminant Coding** — 4/ 100W-1/ 1/ (3)

- Type
- Size: watts or ft.-candles
- No. in unit
- Unit mode
- Distance to (P): Zone (see table 60-1) or in ft. (may be omitted)

Example shown: one 100-watt bare incandescent in Zone 3 (35-80 ft.)

**Illuminant Types**

| | |
|---|---|
| Sun | 1 |
| Moon | 2 |
| Flame (fire, candle, etc.) | 3 |
| Incandescent | 4 |
| Fluorescent | 5 |
| Mercury vapor | 6 |
| Sodium vapor | 7 |
| Other: specify (neon, arc...) | 8 |

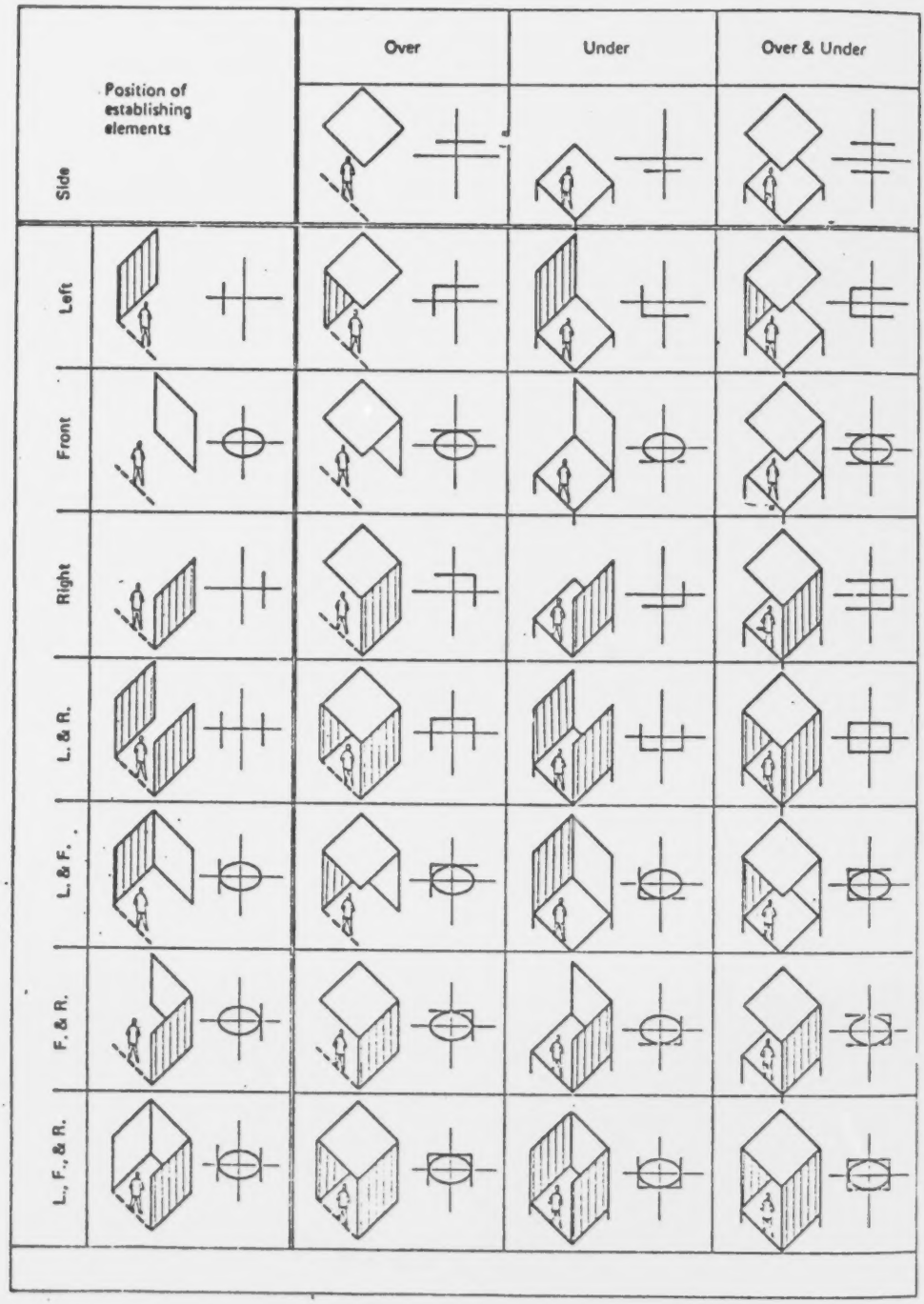
**Illuminant Modes**

**Natural Source Sizes (Moon and Spencer, 1948)**

| | |
|---|---|
| Sun (Mode 1) | 10,000 ft.-candles |
| Sun (Mode 2) | 1,000 ft.-candles |
| Moon (Mode 1) | 0.02 ft.-candles |

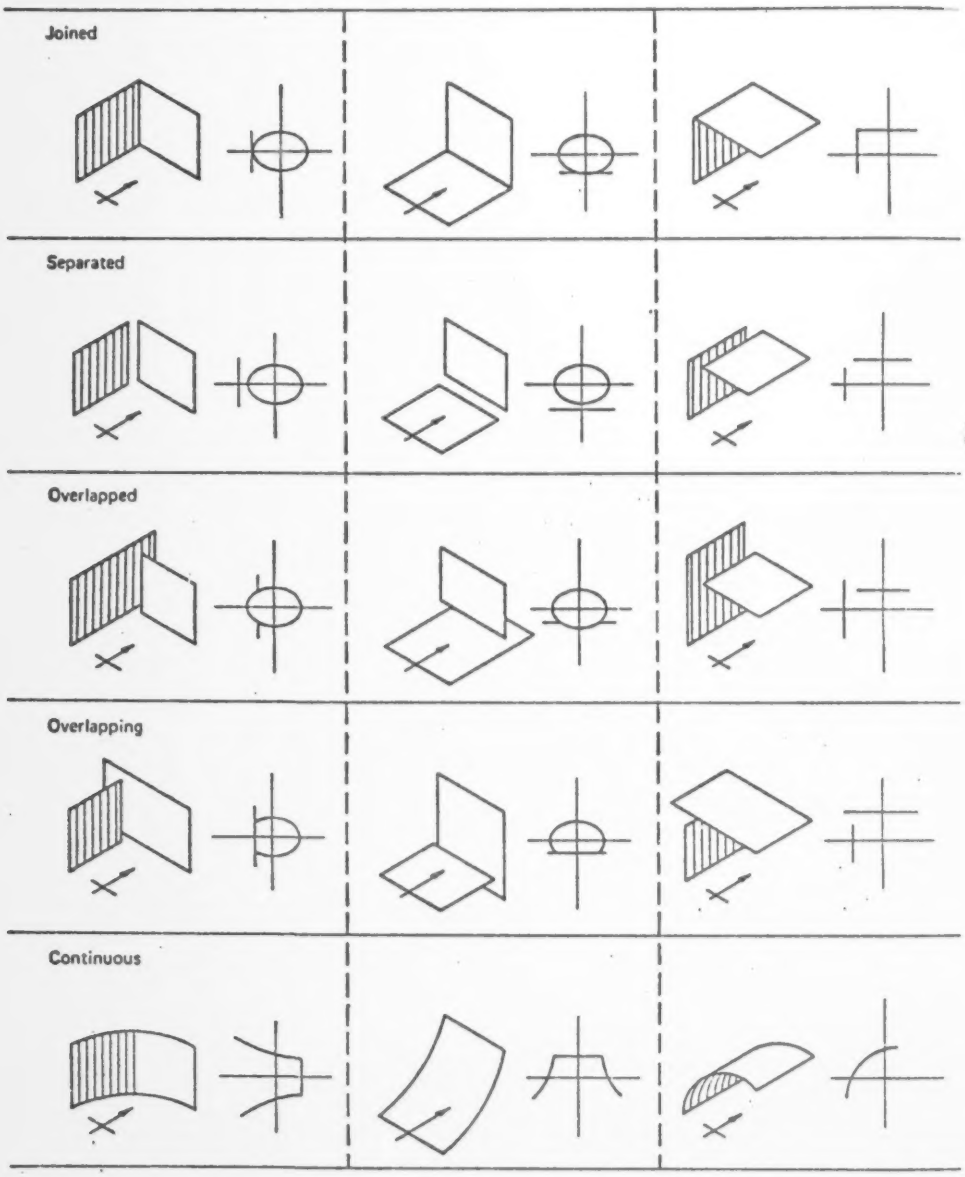
**Sample of notation for a receiver's position in an enclosed space (room).**

**Section: 3.2**



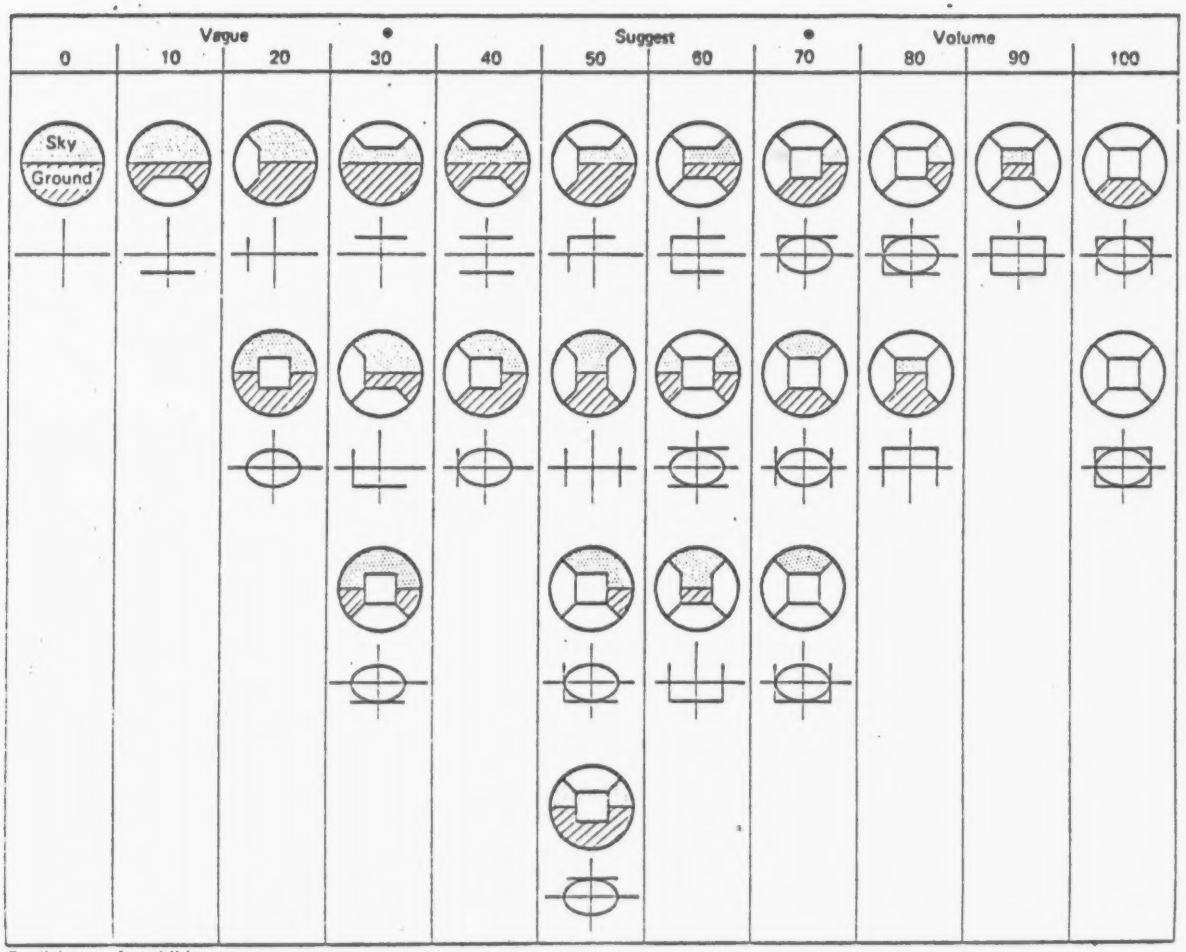
**Sample of notation for a receiver's position in an open space.**

**Section: 3.2**



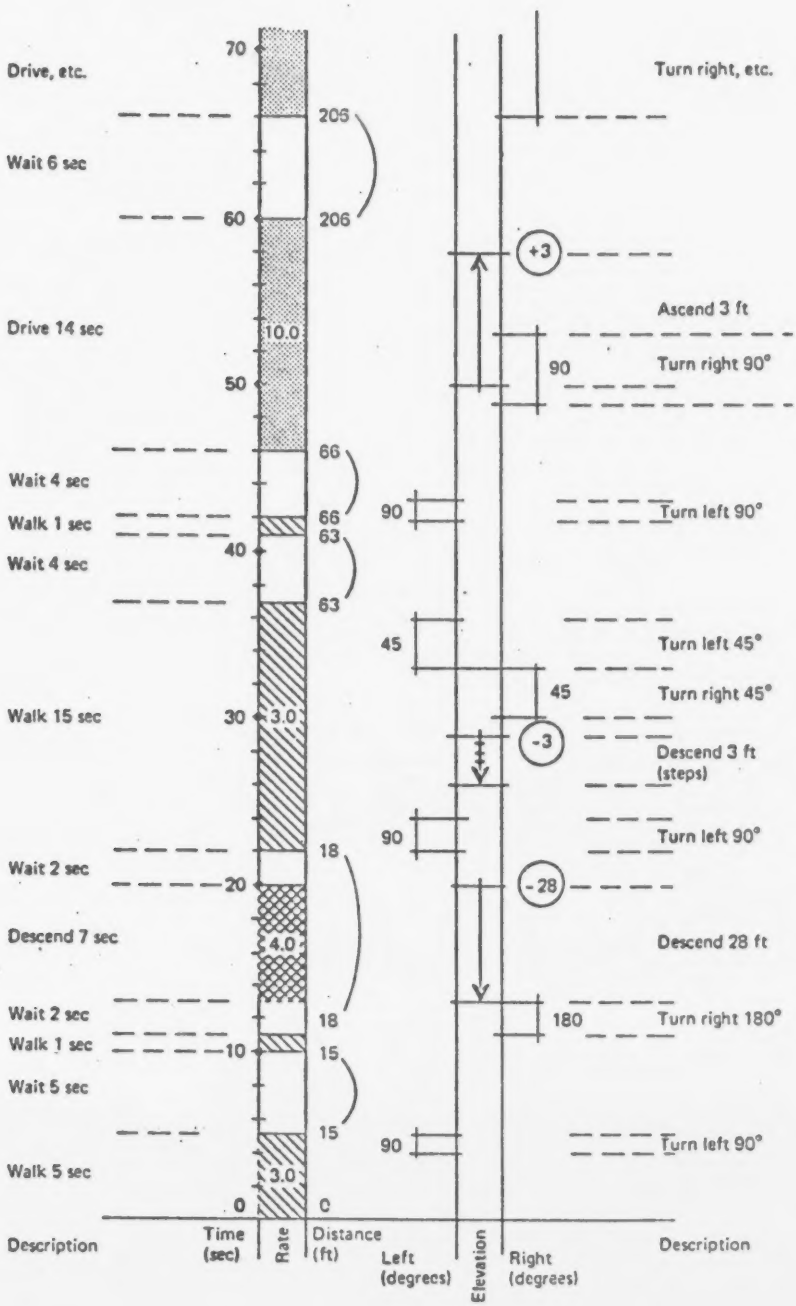
**Sample of the notation for the expression of human group space anatomy.**

**Section: 3.2 - 3.28**



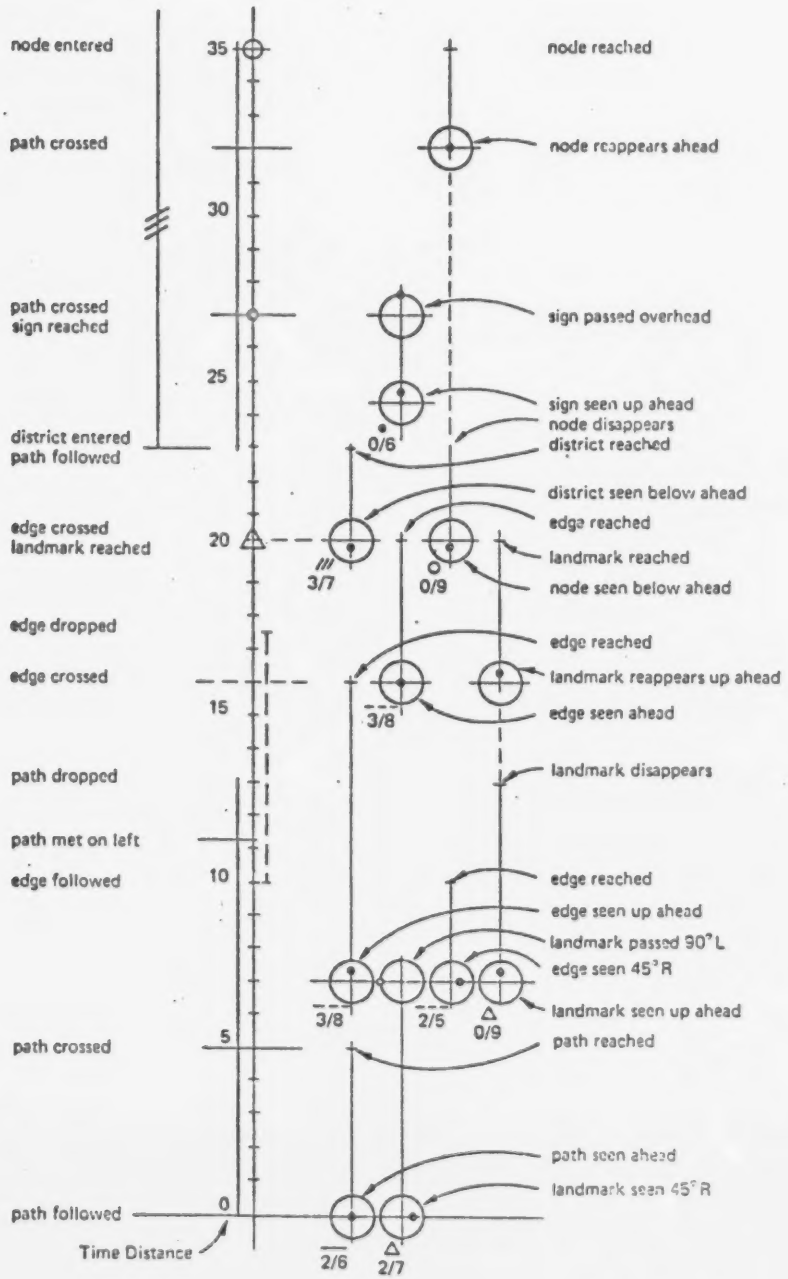
## Sample of Motion Channels, migration of receivers.

## Section: 3.26



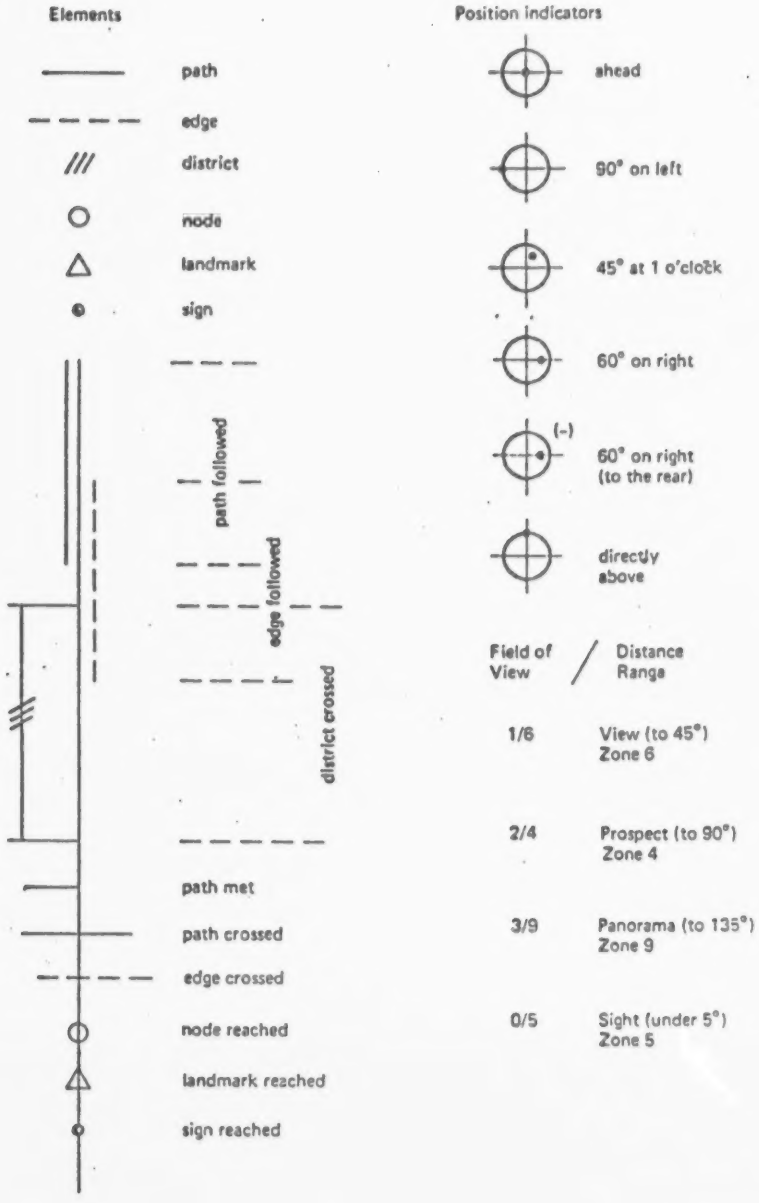
## Sample of Motion Channels, migration of receivers. (continued)

## Section: 3.26



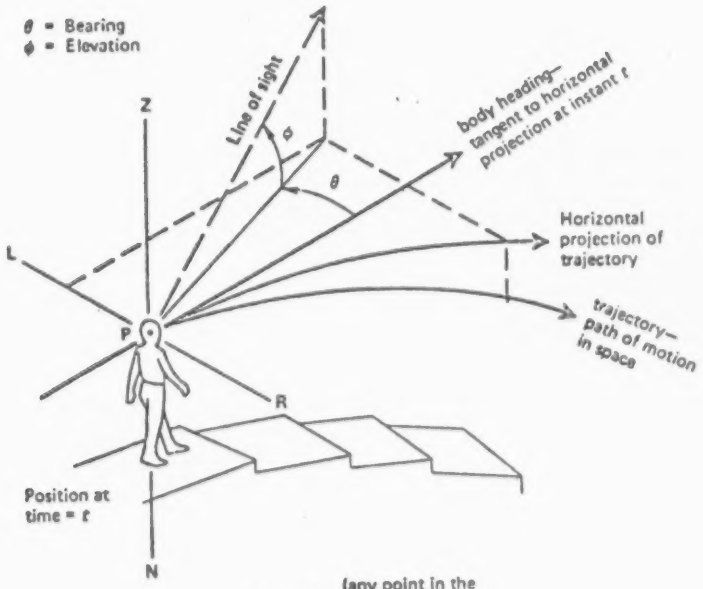
## Sample of Motion Channels, migration of receivers. (continued)

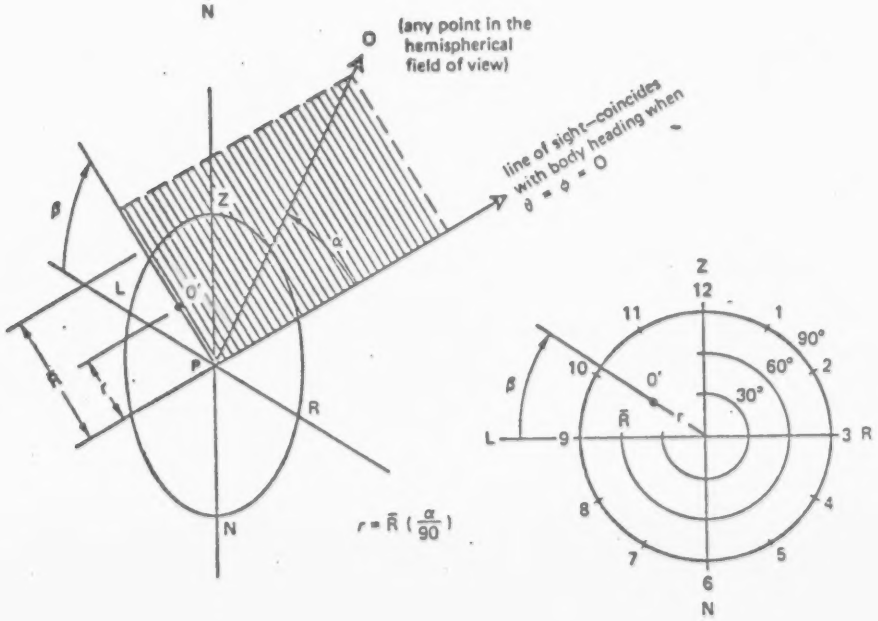
## Section: 3.26, 3.31.1 - 3.31.6



**Sample of notation for Visual Fields.**

**Sections: 3.31.2, 3.31.4**



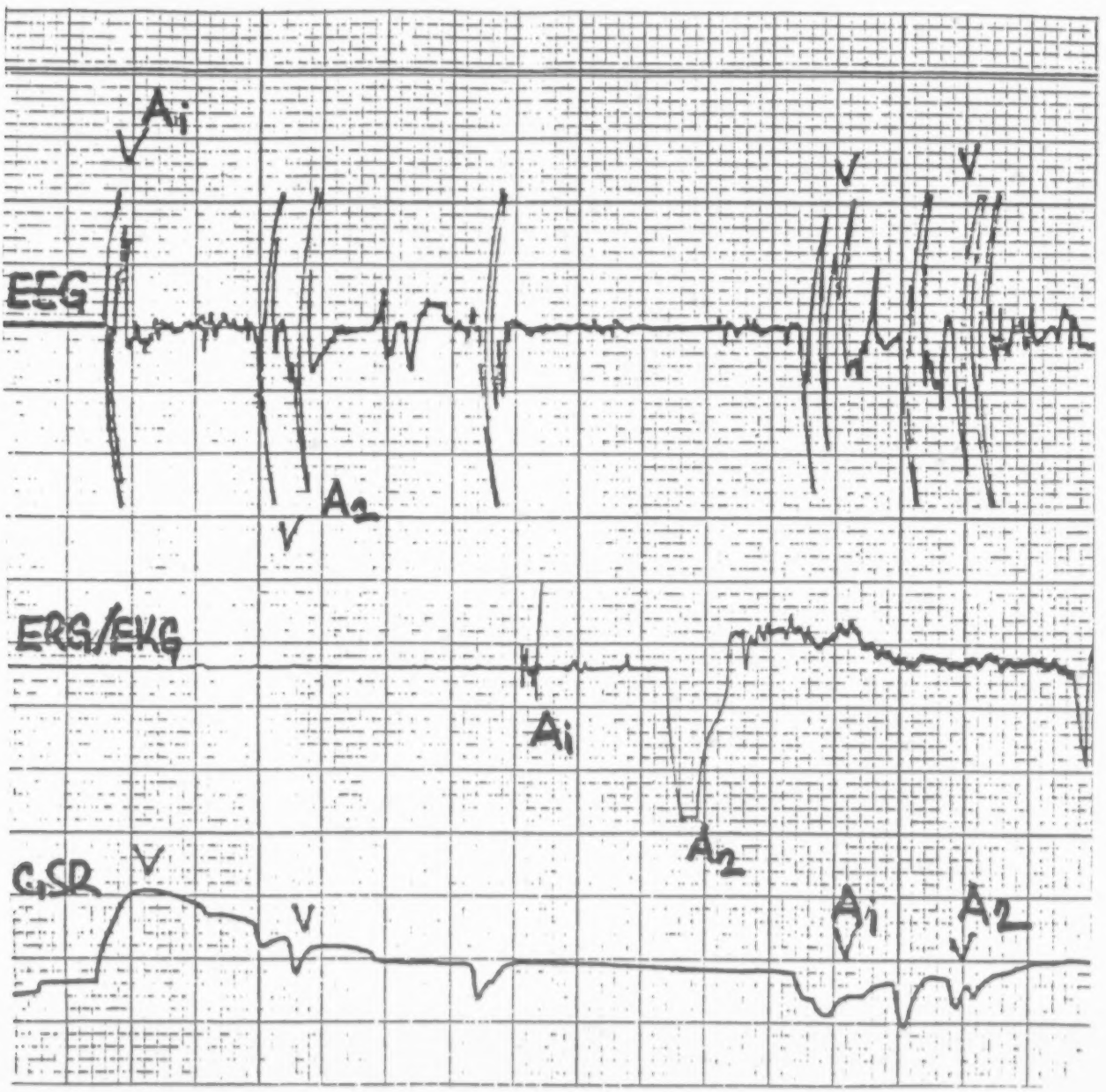



**Portable Eye-Trac System for the visual assessment of a location.**

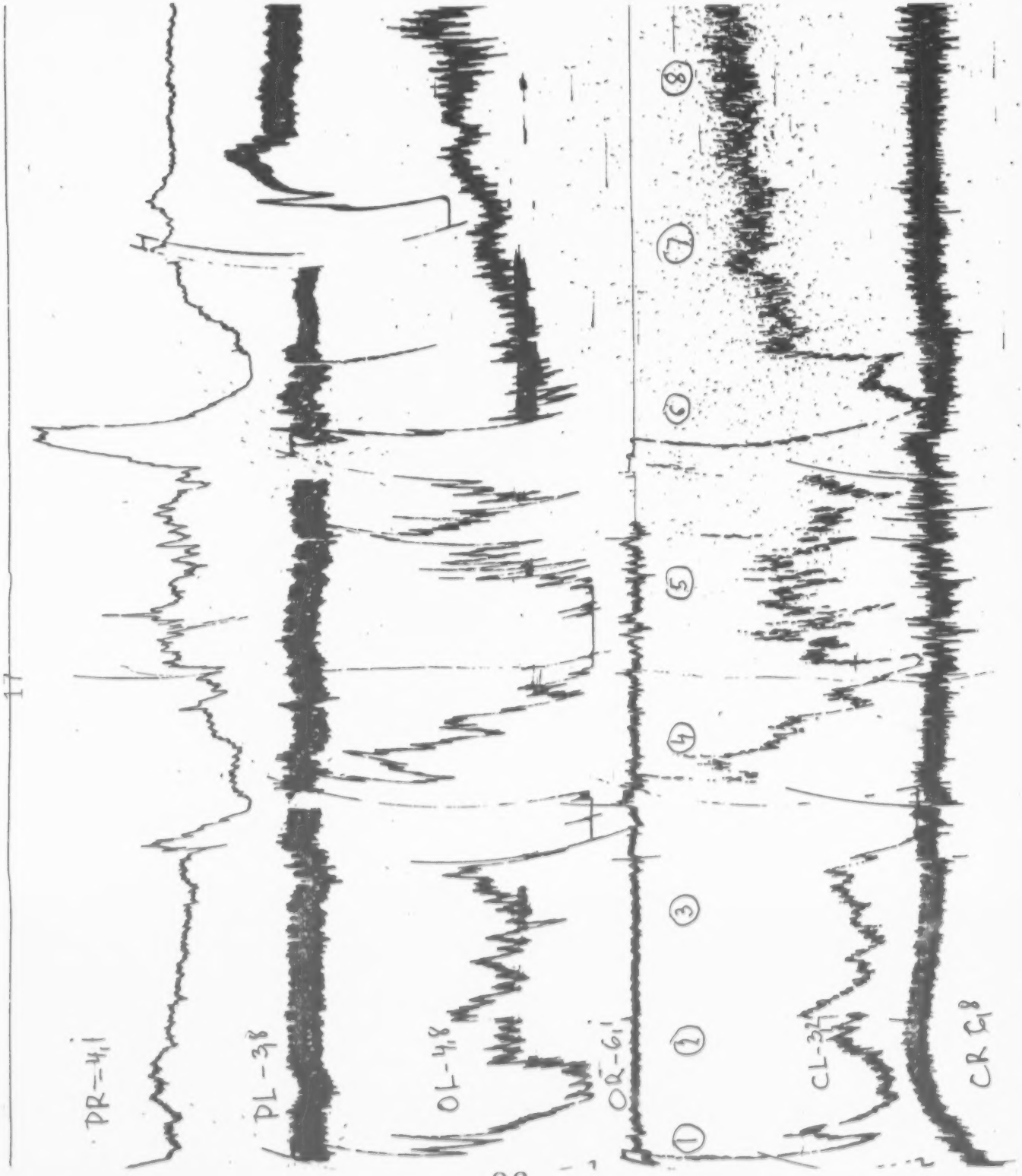
**Biotelemetric System with a miniature portable transmitter.**

Multichannel Biotelemetric System.

Samples of Biometric Recordings.



**Samples of Multichannel Biotelemetric EEG Recordings.**



# 8

# Bibliography and Related Sources

**Recommended Literature: (available in the Learning Center)**

Taylor, I.A., Perception and Design

Thiel, P. (1961) Notes on the Description, Scaling, Notation and Scoring of some perceptual and Cognitive Attributes of the Physical Environment.

**REFERENCES:**

Allport, F.H. (1955). Theories of Perception and the Concept of Structure. New York: Willey Publishing.

Atkin, R. (1981). Multidimensional Man. Harmondsworth: Penguin Books.

Blumenfeld, H. (1953). Scale in civic design. Town Planning Review, April.

Eastman Kodak. (1956). Colour As Seen and Photographed. Rochester New York.

Gibson, J.J. (1966). The Senses Considered as Perceptual Syustems. Boston: Houghton Mifflin.

Hall, E.T. (1959). The Silent Language. Garden City, New York.: Doubleday.

Harman, H.F. (1975). Modern Factor Analysis. University of Chicago Press.

Huchinson, A. (1954). Labonotation. New York: New Directions.

Illuminating Engineering Society. (1961). Colour and the Use of Colour by The Illuminating Engineer. New York.

_____. (1961). Lighting Fundamentals Course, New York.

Kepes, G. (1956). The New Landscape. Chicago: Theobald.

_____. (1968). Design and Light. Design Quarterly, 68. Minneapolis: Walker Art Center.

Kaufman, G. (1980). Imagery, Language and Cognition. Oslo: Universitetsforlaget.

Kosslyn, S.M. and Pomerantz, J.R. (1977). Imagery, propositions and the form of internal representations. Cognitive Psychology, 9, pp. 52-76.

Levy, J. (1980). Cerebral asymmetry and the psychology of man. In Wittrock, M.C. (ed.) The Brain and Psychology. New York: Academic Press.

Lynch, K. (1960). The Image of the City. Cambridge Mass: MIT Press.

Mueller, C.G. (1966). Light and Vision. New York: Time, Inc.

Neisser, U. Visual Search. Scientific American, Vol. 210, No. 6, pp. 94-103

Osgood, C.E. (1967). The Measurement of Meaning. Urbana Ill. : University of Illinois.

Pavio, A. (1971). Imagery and Verbal Processes. New York: Holt, Rinehart and Winston.

Rose, S.A. (1968). A Notation/Simulation Process for Composers of Space. College of Education, Michigan State University, East Lansing Michigan.

Thiel, P. (1961). A Sequence-experience notation. Town Planning Review, April.

Winer, B.J. (1971). Statistical Principles in Experimental Design. New York: McGraw Hill.